The NATIONAL GEOGRAPHIC MAGAZINE

Vol. XIX MARCH, 1908 No. 3

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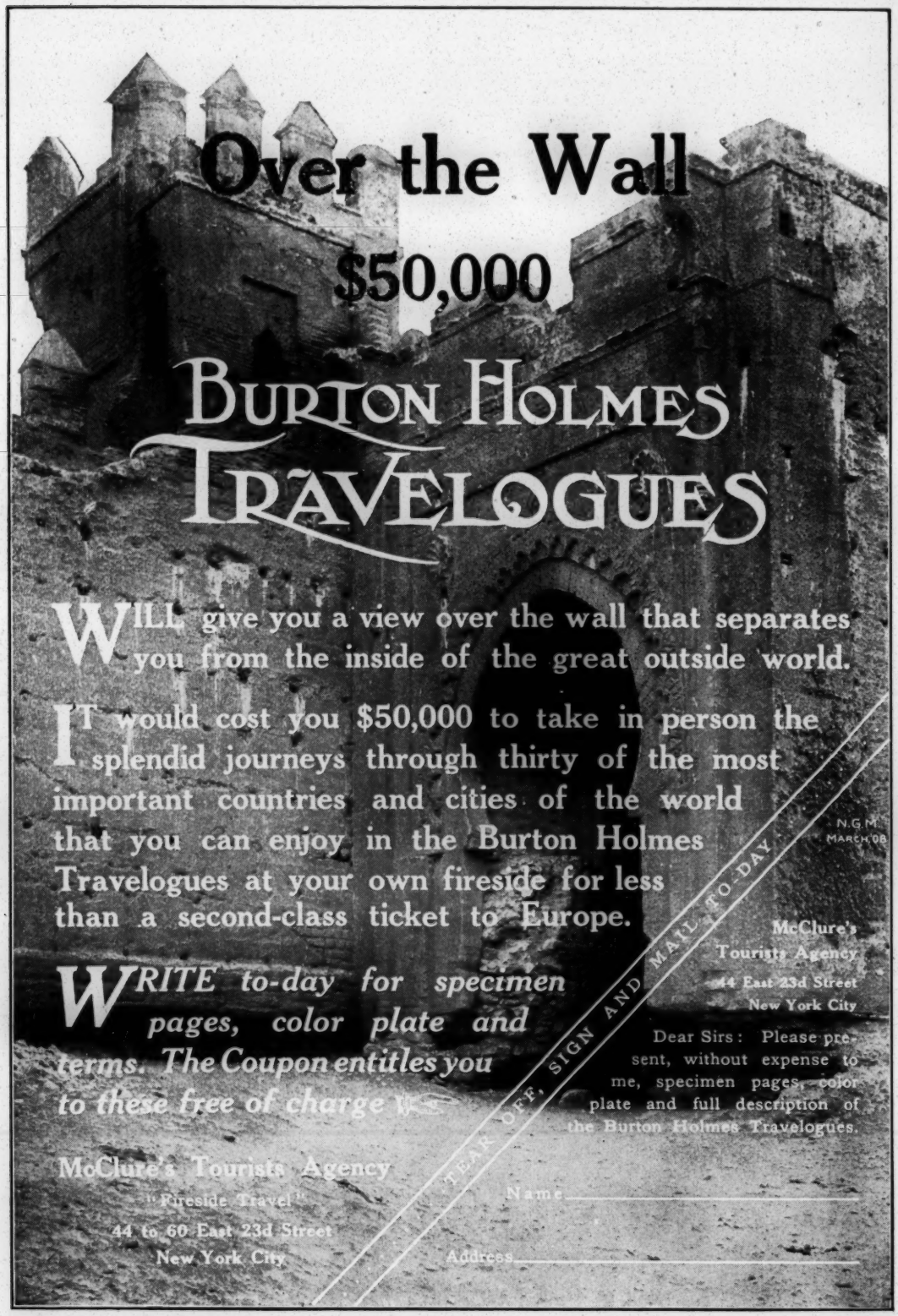
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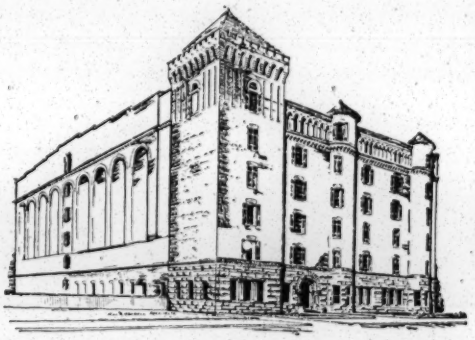

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THE NATIONAL GEOGRAPHIC MAGAZINE

A JOURNEY THROUGH THE EASTERN PORTION OF THE CONGO STATE*

BY MAJOR P. H. G. POWELL-COTTON

MY principal quest in my recent journey to the Congo State was the northern white rhino, known only by a single specimen, shot by its discoverer, Major Gibbons, and eventually sent to America. My search for the animal, and for a couple of elephants standing as near 12 feet in height as possible, occupied five and a half months. During this time I made the Congo stations along the Nile my headquarters for short expeditions westward into the plain. All these posts are malarious and swarm with mosquitoes—Kiro, the most picturesque of them all, being literally infested. In fact, the Enclave generally must rank among the most unhealthy districts of Central Africa; in one year the death-rate among the Europeans rose to over 20 per cent.

On my arrival at Lado, the chief station on the White Nile, in the latter part of December, and throughout the first fortnight of January (the dry season), the heat was intense, the thermometer standing as high as 104° in my tent at 2 p. m. Once away from the Nile, the scarcity of water proved a great difficulty. Stagnant pools in the river beds, fouled by man and beast, and these only at rare intervals, formed the sole supply. In the rainy season so much of the country lies under water that traveling is almost impossible. Owing to the flatness of the thorn-dotted plain, Lado Hill forms a conspicuous landmark for many miles. This district is peopled by the Bari, a peculiar feature of whose huts is the floor, sunk 18 inches below the surface of the ground—a method of construction which appears particularly curious in view of the heavy rainy season.

As my caravan moved farther southward I was struck by the numerous ruins of villages and almost continuous stretches of what had once been cultivated ground. It was evident that at no very distant date, probably before the dervish raids had devastated the country, it must have supported a considerable population. Much of the ground had been terraced and cleared of stones. The village sites were marked by numerous circles, some 6 yards in diameter, formed of wide, thin stones set upright and standing some 18 inches to 2 feet above the surface. The top of each of these stones was nicked to receive the end of a

* An address to the Royal Geographical Society, and published in this Magazine through the courtesy of the *Geographical Journal* (London).

roof-pole. Here and there a double circle of stones denoted a hut built after the form of the modern Abyssinian tucal, with a passage round it. Judging from a few higher stones still standing, these villages had evidently been surrounded by a palisade. At the present time the population is scanty, so that considerable difficulty is found in provisioning the stations. The greater part of the grain for my men had to be drawn from a district several days east of the Nile, on the Uganda side.

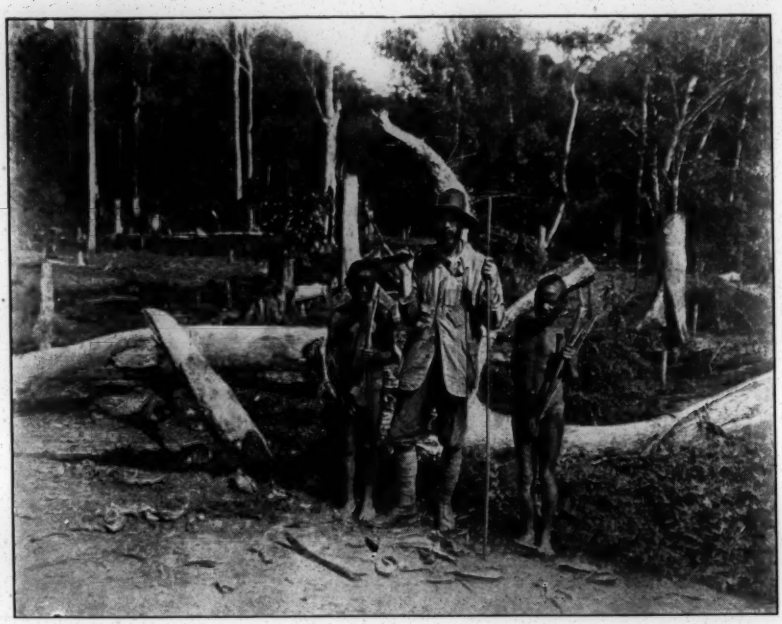
PRIMITIVE BLACKSMITHS

Working southward from Rejaf, I struck up the valley of the Kaya, where scattered settlements of nomad Bari plied the double trade of fishermen and blacksmiths. The women generally took their part in the work as well as the men. In little hollows on the flat surface of a rock, they would pound the filbert-like nuts of iron ore to powder. This was then carried to the smelting pits near by, grass-roofed constructions shaped like the letter V and encircled in heaps of dross and charcoal. Here and there couples of men were hard at work forging hoes, one of them beating the mass of glowing metal into shape with two stones, to serve the purpose of hammer and anvil, while his companion plied the bellows. One of the blacksmiths told me that the iron ore is collected from the surface of the ground at a place ten days distant. When the hoes are completed they are taken over to the great chief of the Bari tribe, on the Uganda side, who buys them for flour.

As the caravan drew nearer Wadelai, I found a stretch of country which proved to be the favorite haunt, at that time of year, of not only white rhino, but bull elephants. Here I was able to realize the two chief objects of my visit to the Enclave, by securing a complete skin and skeleton of a white rhino bull and the hides of two elephants nearly 12 feet in height. One of these latter was destined for the British Natural History Museum, whose director had been trying to procure such a specimen for the last three years. The other I proposed presenting to the Tervueren Museum near Brussels. The preservation of these skins gave great trouble, but they were eventually sent off in good condition to Kampala, which place, thanks to the courtesy of the late Mr Fowler, sub-commissioner Nile provinces and collector at Hoima, they reached in excellent time. But unfortunately, for some reason yet to be explained, the skins were afterwards detained so long that the lake-shore climate completely ruined them, to the loss of the museums and to my disgust, for there was a heavy bill of carriage to pay. When two years previously, in 1903, I traversed the country between Wadelai and Mahagi Bay, at the northwestern corner of Lake Albert, it was practically depopulated, for the villagers had moved over to the Uganda side. Now, to my surprise, I found new villages being established all along the route, the natives having returned to escape the Uganda hut-tax.

From Mahagi Bay station we pushed our way up the hills to Mahagi proper, lying 4¾ hours from the lake and 1,180 feet above it. Here, as in all other stations I had visited, great improvements were to be seen. New brick houses had been constructed and stretches of bush had been cleared to give place to vegetable gardens and cultivation. My route now led over the Nile-Congo watershed, a series of rolling grass hills intersected by running streams fringed with belts of timber. My highest camp was at Mongolula, at an elevation of 5,950 feet. This region is for the greater part very sparsely inhabited and gives promise of one day becoming a valuable grazing ground for white settlers. Through Irumu bands of natives were passing on their way to the Kilo gold mines, where work on the alluvial deposits has been successfully commenced, some 35 ounces of gold being washed per day.

The Ituri River, a day's journey from Irumu, forms the dividing line between the grass land and the great forest. When my canoe had almost crossed the clear, rapid waters, 150 yards wide, I



MAJOR POWELL-COTTON WITH TWO OF HIS PYGMY TRACKERS

noticed on the opposite bank two miniature houses built close to the edge and resembling in every feature the huts of the villagers. The old chief was loth to explain the object of these houses, but at length I was told that they were erected for the shade of his predecessor, who was told that he must recompense them for their labors by guarding the passage of those crossing the river. From that time, whenever a caravan was seen to approach the bank a little food would be carried down to the ghost-houses as a warning that the shade's protection was needed for the caravan about to cross.

THE GREAT FOREST

The great Ituri forest, rendered famous by Stanley's remarkable journey across it, differed greatly from the dismal miasmic place of my imagination, where unhealthy mists and perpetual twilight reigned supreme. Far from shutting out the sunshine, the lofty dome of interlaced branches above our heads only served to soften the pitiless heat of the equatorial sun. Myriads of little sunbeams filtered through the leaves, to settle on the undergrowth in bright patches of light, where the butterflies and birds loved to flit to and fro. In the morning, it is true, the foliage would often be heavy with dewdrops and gossamer, but before eight the sunbeams had lifted the mists from the dense undergrowth, the giant trees, and the graceful creepers that flung their fantastic coils and festoons from branch to branch and from tree to tree. It was in the early morning that one felt the hush of the great forest, whose impressive stillness was only broken by the crackling of the sticks under the feet of our caravan. Here and there in the forest are little natural glades, called by the natives "eddos," some watered by sluggish marshy streams that almost lose themselves in the rich grass, while in others the waters rush and tumble over the clear quartz sand-beds and among moss-grown boulders. Dark tunnels, worn through the undergrowth by generations of beasts on their way to water, lead down to these rifts in the dense vegetation; for it is here that the beasts of the forest, from

A GROUP OF PYGMIES

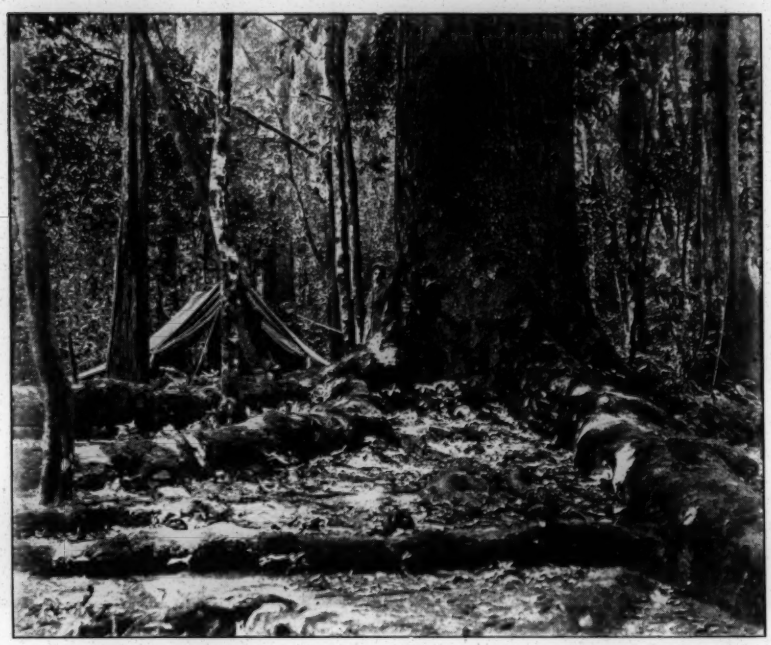
elephant to the timid little dik-dik, come down to drink, bathe, and crop the fine grass at the water's edge.

The seasons in the forest are very ill-defined. Generally rain falls on four or five days of every week, while seven days without a thunderstorm was the longest dry period I experienced. In any big clearing it was curious to hear a storm coming up, for the sound of the drops pattering on the leaves of the trees reached us long before the rain. The roar of a hurricane through the forest was an experience never to be forgotten. Our camp was nearly wrecked on one occasion, and a passage several hundred yards wide was cleared through the trees for a distance of some miles. In 1905 I was in the forest from the last few days of June to the first half of August, while in the following year I spent from the last week of January to the first days of August in practically the same districts. July of 1905, passed between Irumu and Mawambi, was by far the wettest month of the ten. The following July, however, spent between Makala, Mawambi, and towards Beni, was one of the driest. While the forest is damp, I came across but very few boggy places and no large marshes. Mosquitoes are almost unknown.

THE DENIZENS OF THE FOREST

The population of the forest is numerous, from the pygmies, considered to be the most savage and primitive, to the Mongwana, the followers and descendants of the Arab ivory and slave dealers, to whom a certain amount of Moslem civilization and handicraft have been handed down; and dotted about at wide intervals, the neat, well-ordered stations of the Congo government gave evidence of a European civilization that has crushed Mongwana power and effectually abolished the slave trade.

The climate of the forest seems to have no detrimental influence on the physical development of any of the tribes who find their home under its shelter. The Mongwana are a tall, well-proportioned race of



A FOREST GIANT, WITH TENT BETWEEN TWO EMBEDDED ROOTS

men, and many of the women seem to have inherited a certain Arab grace of form. The Babila, another tribe with which I came in contact, although short of stature, are a sturdy, healthy-looking race, while the pygmies certainly show no signs of physical degeneration. But the native from the plain, or the white man, usually suffers severely after a few months' residence in the damp atmosphere of the forest, rheumatism, dysentery, and bilious fevers being the most common complaints.

The soil of the forest is so rich in leaf mold that it produces two to three crops a year. Like the natives, the villagers are in the habit of continually changing their cultivation from one spot to another, although here it necessitates a great deal of labor. The underwood and saplings are first all cut down, and then attention is turned to the smaller trees, which are felled some 8 feet from the base, and left to cumber the ground where they fall. By this time the underwood is sufficiently dry to help in the destruction of the larger trees that are alone left standing. Piling it around the trunks, the natives set it alight in order to burn the bark, and thus kill the trees, which eventually stretch out their gaunt arms over crops of banana, millet, rice, maize, sweet potatoes, and manioc.

Grass in the forest can only be found in the eddos, and in the clearings made by the natives for their gardens. For this reason there are no cows, and the few imported sheep and goats that manage to withstand the hardships of the march through the forest to the villages are cherished by the owners as their most precious possessions. Among the little flock that followed us on our journey, the death-rate in the forest was over 50 per cent, and this in spite of every care. Night after night, a platform strewn with leaves was built for them, with a roof as shelter, and during the march each animal had a nose-bag with a few potatoes in the bottom, to prevent them getting hungry or eating poisonous leaves from the undergrowth.

FLOATING VILLAGE OF KATANGA, AS SEEN FROM THE SHORE

On the site of an abandoned garden vegetation rapidly springs up, to form a favorite haunt of elephant, buffalo, wild pig, bush-buck, bongo—an animal even rarer in the Ituri forest than the okapi—and leopards, which latter are, curiously enough, never to be found far from a native settlement. In coloration the animals of the forest have a tendency to become darker in shade than those of the plains. A notable example of this is the ratel (*Mellivora cottoni*), which is entirely black, while in the south and west of Africa the whole upper surface of the body, head, and tail are an ashy gray.

Mica abounds in the neighborhood of Mawambi, and the whitewash used for the houses in the post is so full of minute fragments that the walls sparkle in the sunshine.

THE PYGMIES

This station is a great center of the pygmies. They live in small communities of six to eighteen men, with their wives and families. Each group is governed by an elder, but there does not appear to be any recognized supreme chief, and the communities are often at war with one another. They have no permanent villages; their low primitive huts, thatched with the large leaf of *Sarcophrynium arnoldianum*, are built in a little clearing in the forest, and are moved, not only for their customary biannual migration, or when hunting in that district is becoming difficult, but also on the death of any member of the group, or also when they have killed some large animal. It is easier, in the latter case, to move the village to the animal than it is to move the animal to the village. Their time is passed in hunting and collecting honey, wild fruits, and roots. While they kill the larger animals, even elephants at times, with a short-shafted, broad-bladed spear, by far the greater quantity of their game is taken by driving it into nets.

The pygmy is a most expert climber, and no matter how high the wild bees may have their nest, he will scale up and cut it out in an incredibly short space of time. Each group of pygmies attaches itself to the chief of one of the other forest tribes, whom they supply with meat,

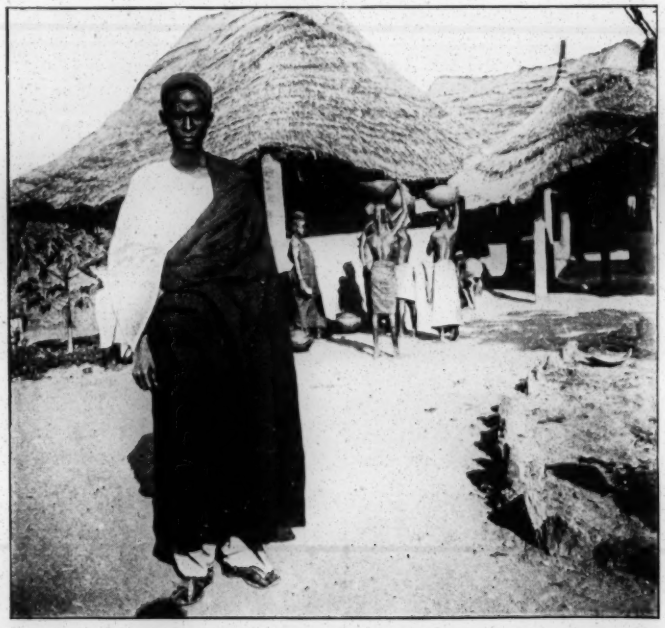
THREE HUTS OF THE FLOATING VILLAGE, KATANGA

honey, creepers as ropes, and leaves for thatching in exchange for vegetable produce. Tilling the ground is an occupation regarded with scorn by the true pygmy. Bows and arrows are his weapons of war. With these he is a skilled marksman, for he is constantly practicing on monkeys and other small beasts. All the ironwork used by a pygmy is traded from other tribes. Bark cloth dyed terra-cotta or a soft gray is his principal manufacture, but he also makes wooden honey-pots, pipestems, bows and arrows, together with personal ornaments of fur and feather, and sleeping mats of skin. The dances of the pygmies are the most interesting of any I have seen, and are carried on with great energy and enthusiasm for hours at a stretch. Nearly all of them portray some feature of a hunt, and end up with the feast that follows its success.

A FLOATING ISLAND

Katanga was the most southerly point we touched. This village was one of the most curious I have ever visited. The main group of thirty huts was built on one huge floating platform some little distance out on the waters of a sheltered bay. The platform rises and falls with the surface of the lake, being moored by poles driven into the mud. The villagers are a robust, well-built race, in spite of constant intermarriage, for the men never choose their wives from among the women of the plains. They subsist by hippo hunting and fishing, carrying on a lucrative trade by the purchase of salt from Katwi to exchange for sheep at the southern end of the lake.

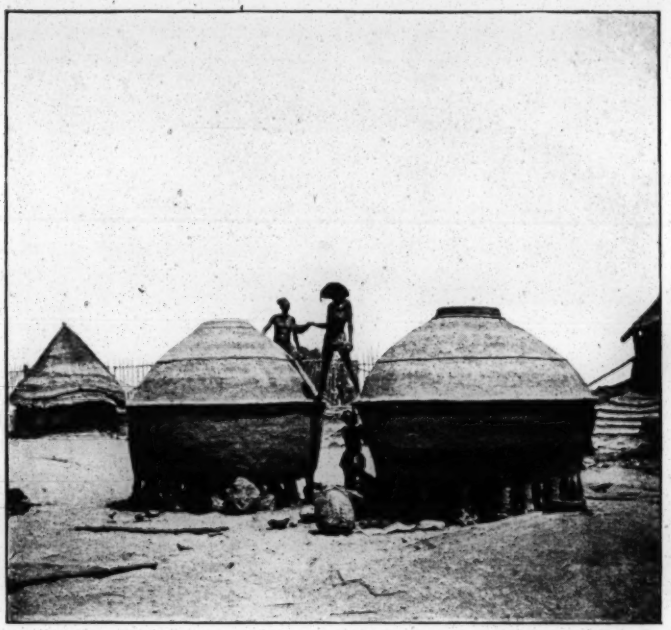
WALL OF BURNT CLAY SURROUNDING A VILLAGE NEAR TIMBUKTU, AFRICA



NATIVES NEAR TIMBUKTU, IN THE VALLEY OF THE NIGER

A YOUNG GIRL, NEAR TIMBUKTU

A NATIVE HUT SHOWING BURNT CLAY WALL—SCENES IN FRENCH TERRITORY IN THE VALLEY OF THE NIGER



GRANARY IN THE VALLEY OF THE NIGER

For this and the preceding four illustrations this Magazine is indebted to "La Société d'Etudes Coloniales de Belgique," Brussels.

IN THE VALLEY OF THE NIGER

THE French during recent years have been sending many expeditions across the Sahara Desert and have thoroughly explored Timbuktu, formerly the mysterious city of Africa, and all the country round about it. They have found there queer types of architecture and relics of a civilization which centuries ago was very great. They have also discovered in caves exceedingly ancient human relics, showing that this part of the world was inhabited during the Stone Age by a people not unlike the prehistoric Cliff-dwellers of this country.

But perhaps the most interesting result of these expeditions is the apparent proof that the Desert of Sahara is constantly growing larger by pressing southward. The region along the upper Niger and east to Lake Tchad is becoming dryer each year, with the result that the arid belt across Africa is widening. This gradual desiccation resembles that occurring in central Asia, and is the principal reason for the degeneracy of the peoples along the Niger. The NATIONAL GEOGRAPHIC MAGAZINE has in preparation a large map of Africa, which will be sent to the members of the Society in about two months.

MAKING CASSAVA BREAD, SAINT VINCENT, WEST INDIES

Cassava is a native plant of tropical America, but has been extensively introduced into Africa and other tropical countries. It grows in bush form, usually six or eight feet high, and its roots, which grow in clusters, vary in size from a few inches to three feet long, and sometimes weigh as much as twenty-five pounds. Cassava roots form the principal food of the common people in tropical America. It is generally handled commercially in the form of meal, somewhat resembling oatmeal, but is made into thin, round cakes by the natives, known as cassava bread. The meal is exported from some parts of the West Indies to Europe, where it is used in manufactories as starch, and is also formed into tapioca. The series of illustrations of making bread, pages 165–179, are from photographs by the Keystone View Co., and are copyrighted by them.

MAKING TORTILLAS, SALVADOR, CENTRAL AMERICA

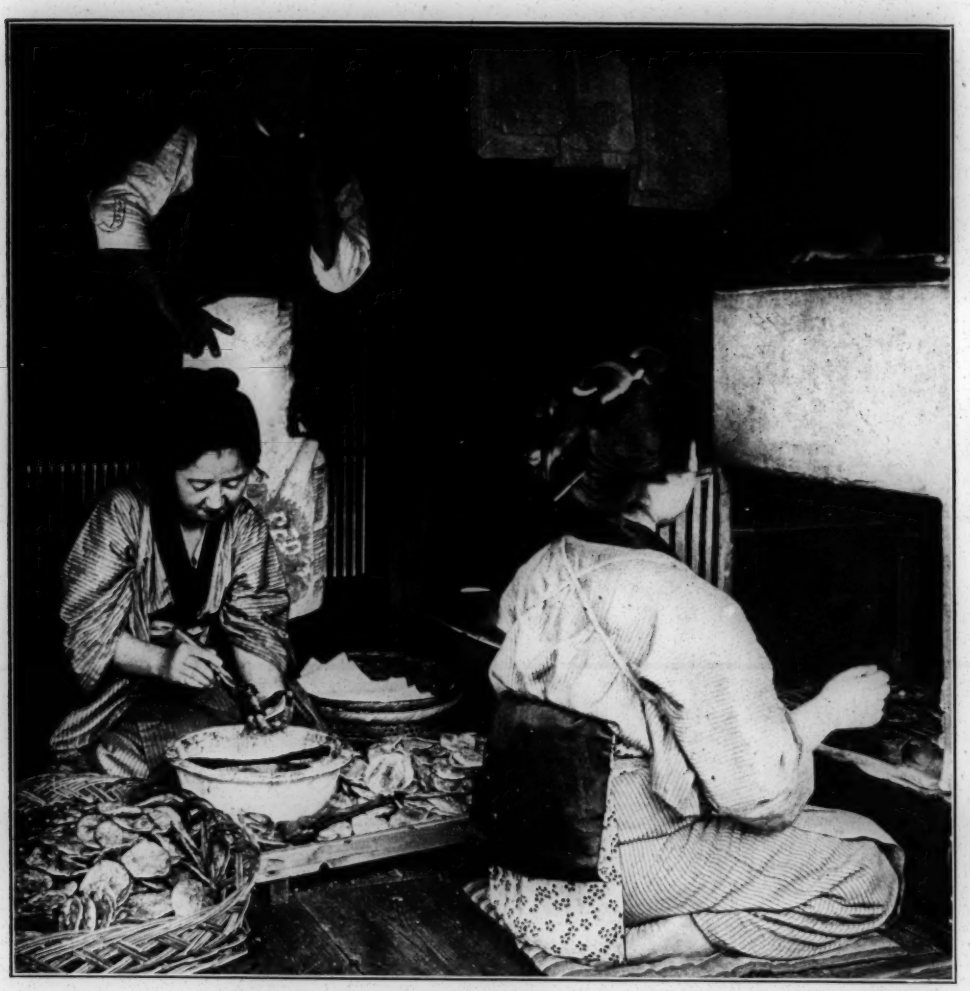
Tortillas are prepared from Indian corn, which is first parboiled to make it clean and soft. The meal is then crushed into a paste with a stone rolling pin on a small stone table, as in this picture, after which it is baked on a plate of iron or earthenware, but not enough to brown the tortilla, which is served hot. Copyrighted by the Keystone View Co.

TORTILLA MARKET, GUADALUPE, MEXICO

One of the strange customs noticed by Americans in Mexico is that the natives are almost constantly eating from morning until night. Wherever a train stops there are men, women, and children selling boiled eggs, fried chicken, and many dishes distinctly Mexican, all generally seasoned with Chile and other acrid spices; native cakes (tortillas), perhaps prepared and cooked at the train side, are also to be had, and there, too, may always be found the senorita with her bottle of pulque. At the market a large portion of the purchases are for immediate consumption; hence, as shown in this view, women are always present with a handful of dough and portable charcoal stoves, supplying hot tamales and tortillas. This view shows the tortilla-makers as they appear on Sundays and feast days in front of the Cathedral Guadalupe. Copyrighted by the Keystone View Co.

A BREAD "WALLAH," JEYPORE, INDIA

These round, flat cakes of unleavened bread are more like pancakes than any other article of food in common use among us. The cakes are called chapatties. The cook shapes them between his hands and bakes them on a griddle or on the coals. They are made of wheat flour, and are a common article of diet among the well-to-do classes in central and northern India. The poorer people eat cake made of corn meal, millet, and a coarse, hard grain called raggy. In western India barley cakes are eaten to some extent. In the south boiled rice is made into cakes known as hoppers, which is the Anglo-Indian rendering of the Tamil appa. Copyrighted by the Keystone View Co.



A BAKERY IN JAPAN

Old Japan had no bread or biscuits. Rice, beans, fish, eggs, and millet were and are the chief articles of food. The Japanese knowledge of bread dates from their acquaintance with the Portuguese, who first entered Japan in 1542. In 1890 there was a rage for foreign bread in Tokyo, even among Jinrikisha men and coolies. Piles of loaves were seen at every little cook-stall; but the fashion subsided like a fever and ordinary Japanese victuals resumed their wonted place. Biscuits such as we see in this view are a compromise between oriental and occidental cookery. They are of various kinds, made of rice or of wheat flour and baked over a charcoal fire. Copyrighted by the Keystone View Co.

TWO WOMEN GRINDING AT THE MILL—PALESTINE

Wheat is sown, reaped, and ground in Palestine and Syria by the same primitive methods used 2,000 years ago. Copyrighted by the Keystone View Co.

BAKING BREAD IN SYRIA

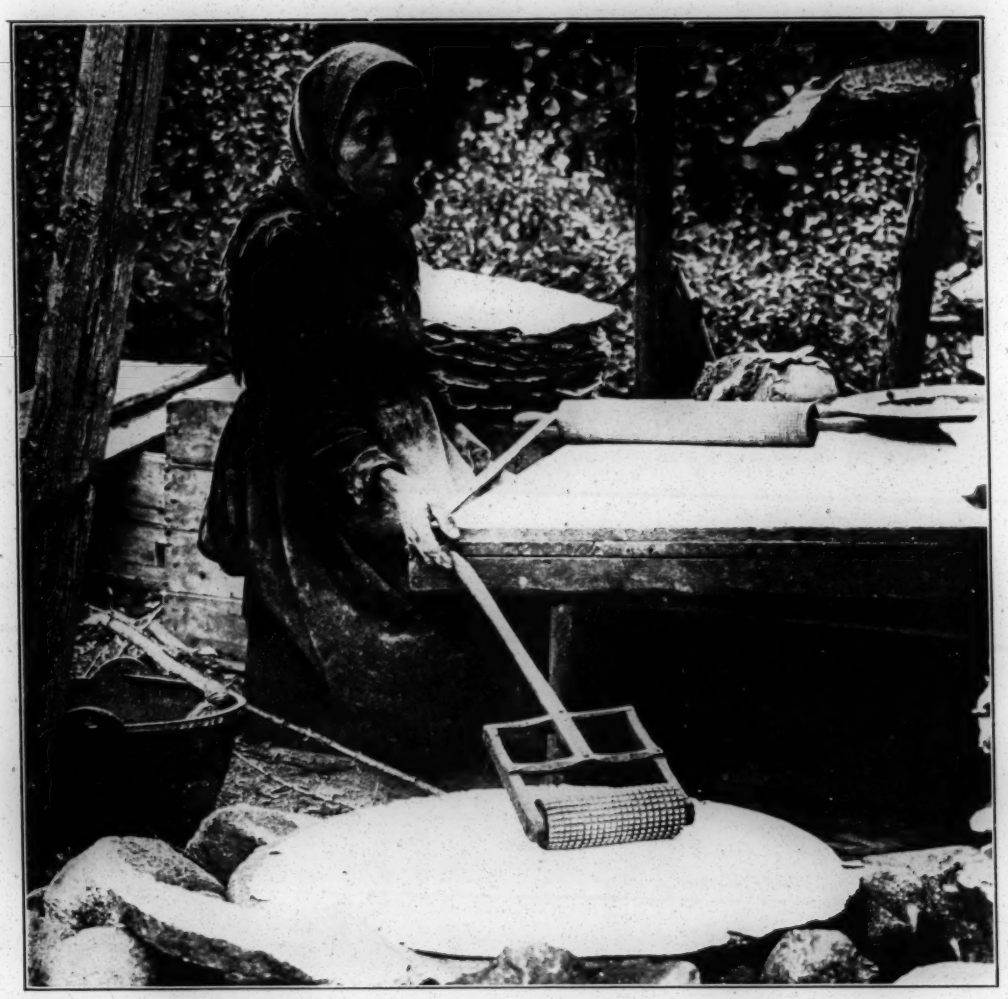
The hearth is simply two stones raised on end, over which an iron plate is laid, on which the bread is baked. Copyrighted by the Keystone View Co.

BREAD OF THE ORIENT, EGYPT, AND TURKEY

These loaves are not of such generous size as the reader may infer. Notice a loaf to the right, purposely crushed for this occasion. The material is first rolled out or pounded flat like pie dough and two layers successfully united at the edges. These are then placed in a hot oven, where they puff up and are baked in a remarkably short time. Copyrighted by the Keystone View Co.

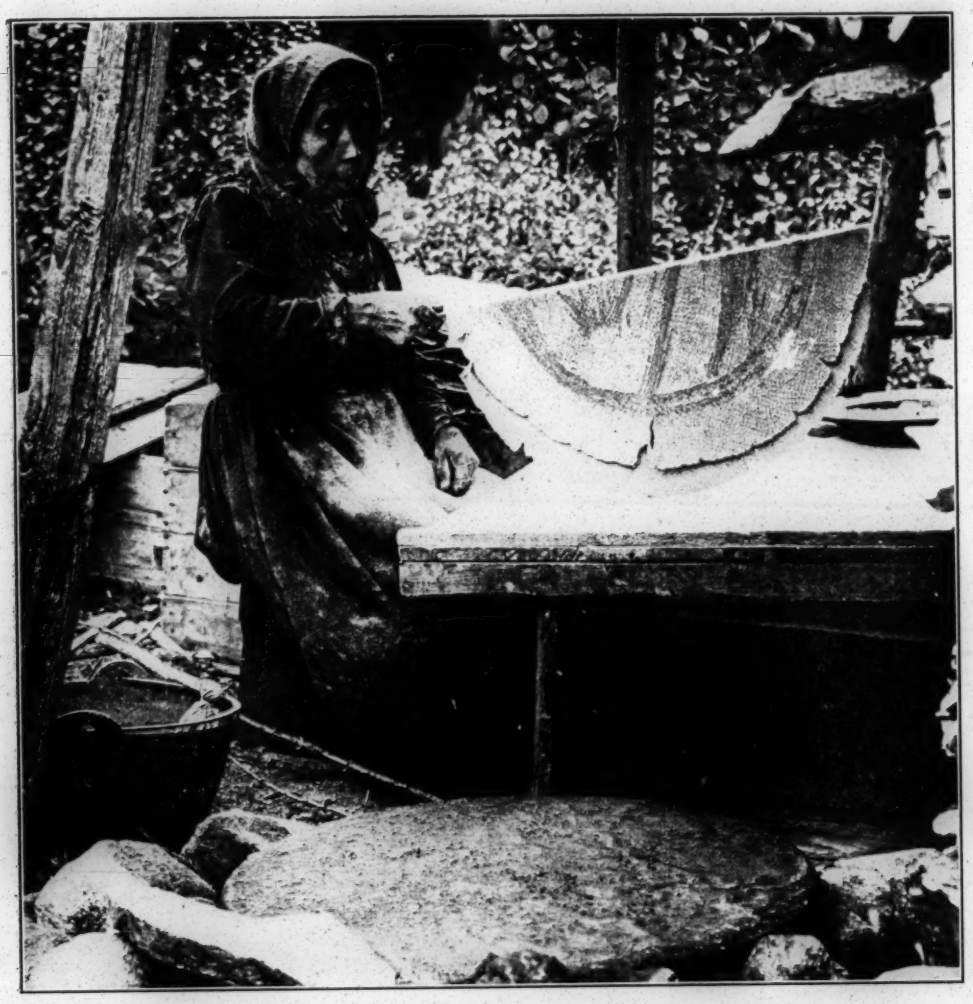
AN OLD-FASHIONED BAKERY STILL USED IN SECTIONS OF CANADA AND THE UNITED STATES

This bakery resembles the New England oven of two generations ago. A week's supply of bread for a large farm household can be baked at one heating. Copyrighted by the Keystone View Co.



MAKING THE "FLAT BREAD" OF THE NORWEGIAN PEASANT

This Norwegian woman is baking the well-known flat bread under a little shelter of dried branches. The dough for this bread is in the shallow dish in front and to the left of the woman, and is made of coarse barley meal and water. After being rolled thin, it is removed to the round flat stone in the foreground, under which a fire of faggots is kept burning. Here it is baked, then laid on the pile on the opposite side of the picture. Copyrighted by the Keystone View Co.



MAKING THE "FLAT BREAD" OF THE NORWEGIAN PEASANT

This barley bread is stored in a dry place for the winter, when it forms one of the chief foods of the peasants. Though made in the most primitive fashion, it is usually clean and palatable. Copyrighted by the Keystone View Co.

Photo from Corby Bros., Washington, D. C.

THE LABORATORY OF AN AMERICAN BAKERY, WHERE ALL THE INGREDIENTS ARE CAREFULLY TESTED

MARKING THE ALASKAN BOUNDARY

UNUSUAL difficulties are being met and overcome in marking the Alaskan boundary as determined by the Boundary Tribunal at London in 1903. The shortness of the season in which the work can be done, the absence of all trails, the necessity of climbing almost inaccessible peaks, and the severe cold practically all the time have made the surveying of the boundary a very hard problem. The work is, however, being pushed vigorously by both the United States and Canadian governments.

The illustrations on pages 180-189 will give the reader an excellent idea of the region in which the work is being done. These illustrations are from photographs by Messrs Radcliffe Hordern and E. R. Martin, of the Alaskan Boundary Survey, and have been sent to this Magazine through the courtesy of Hon. O. H. Tittmann, Alaskan Boundary Commissioner for the United States.

Kate's Needle, whose peculiar profile is shown on page 180, is about 10,000 feet high, and is the highest mountain in southeastern Alaska outside of the Saint Elias and Mount Fairweather ranges. It is one of the boundary mountains selected by the Tribunal of London. Whichever of the pinnacles projecting above its summit ridge is chosen as the exact turning point in the boundary will be a grander and more enduring monument than any which can be built by human agency. The reader will note the remarkable profile of a female face with a striking head-dress.

The mountain is the source of great glaciers lying on its slopes, and from one of these in a most inaccessible region this photograph was taken by Mr Radcliffe Hordern, of the Alaskan Boundary Survey. The mountain is 8 miles west of the Stikine River and about 34 miles from Point Roberts at the mouth of the river.

The views on pages 181-189 were all taken by Mr Martin in the vicinity of Glacier Bay, Alaska.

Photo from Corby Bros., Washington, D. C.

THE DOUGH ROOM OF AN AMERICAN BAKERY, WHERE THE FERMENTATION OF THE DOUGH IS DEVELOPED

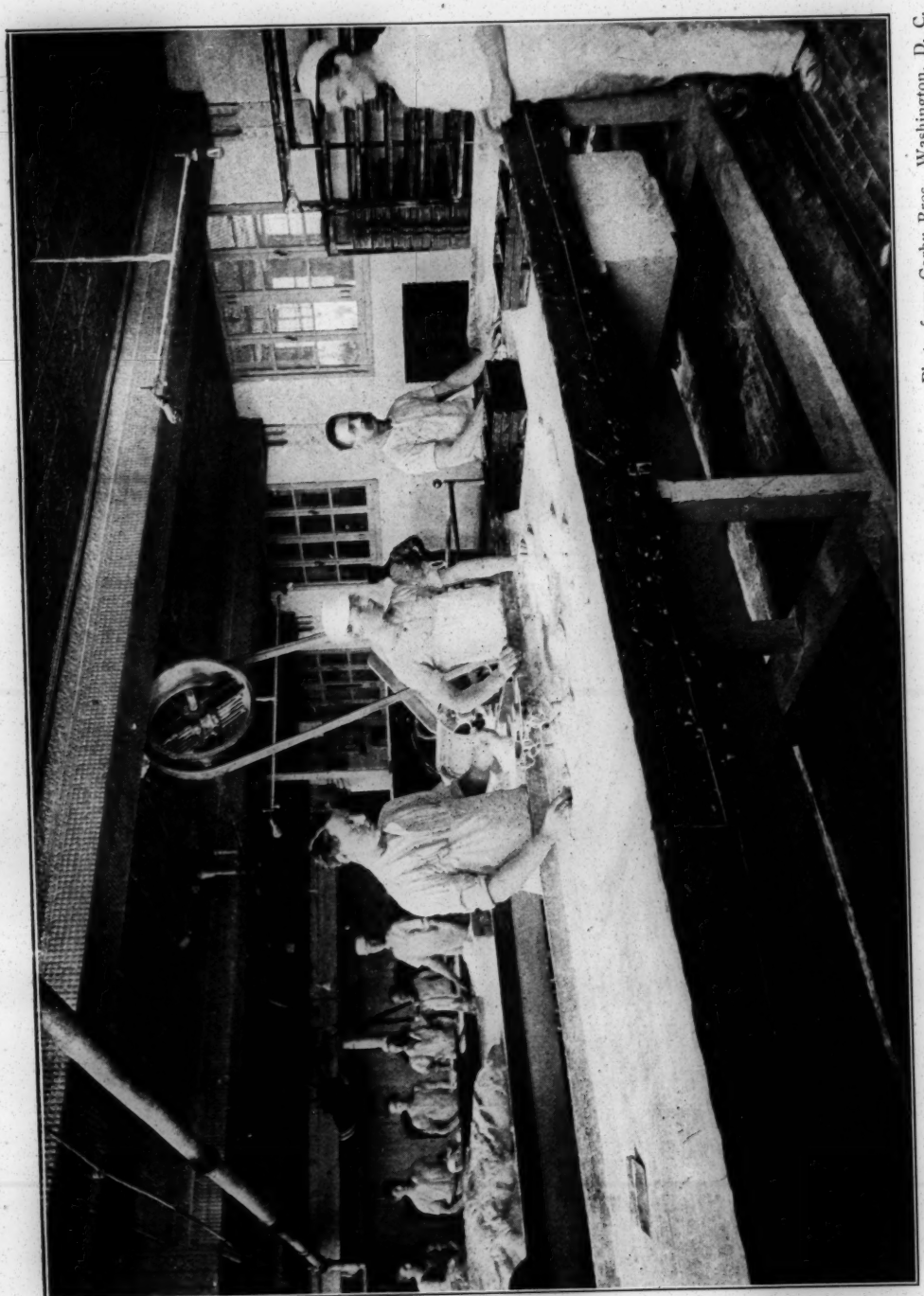


Photo from Corby Bros., Washington, D. C.

MOULDING THE LOAVES OF BREAD IN AN AMERICAN BAKERY

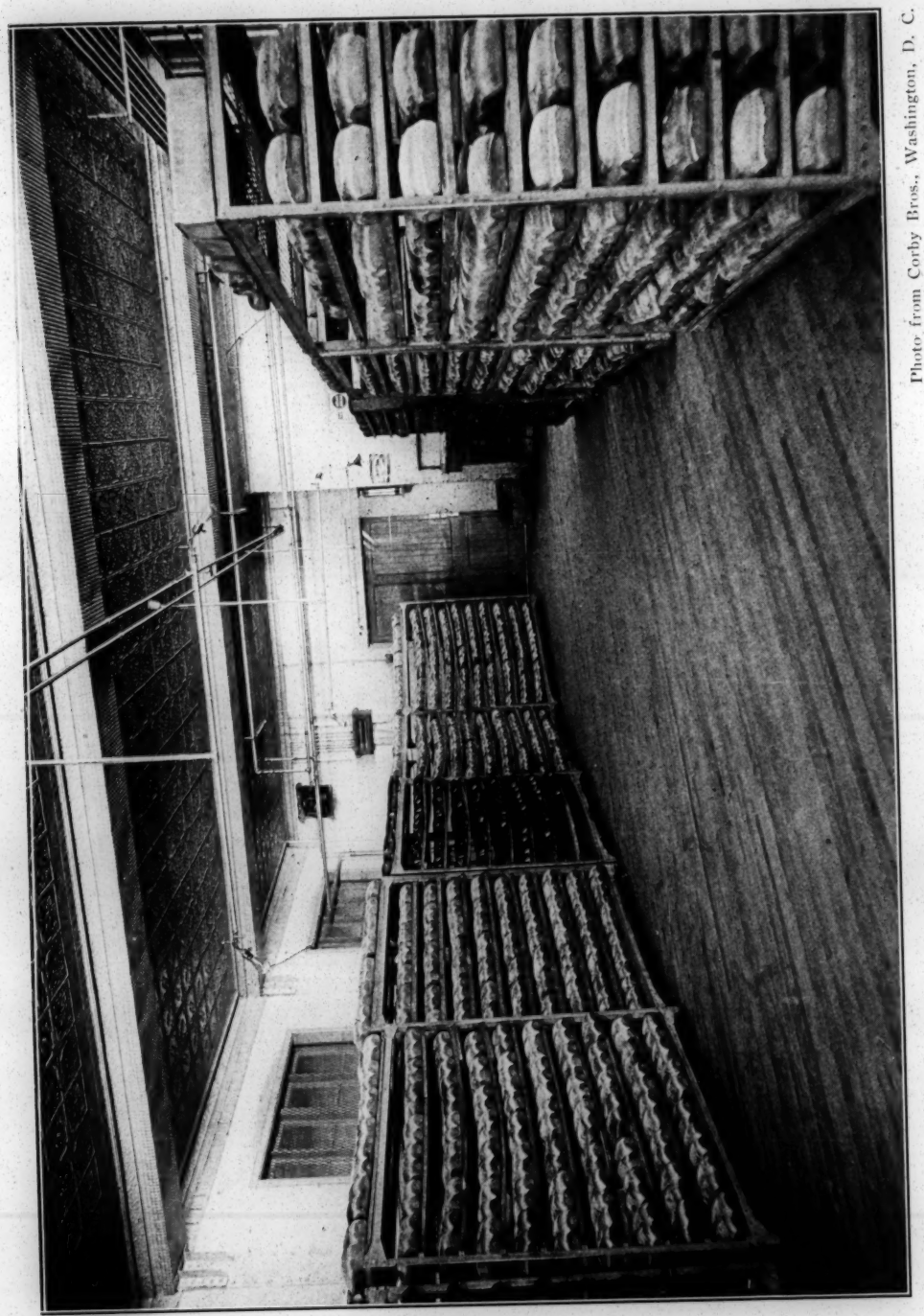


Photo from Corby Bros., Washington, D. C.

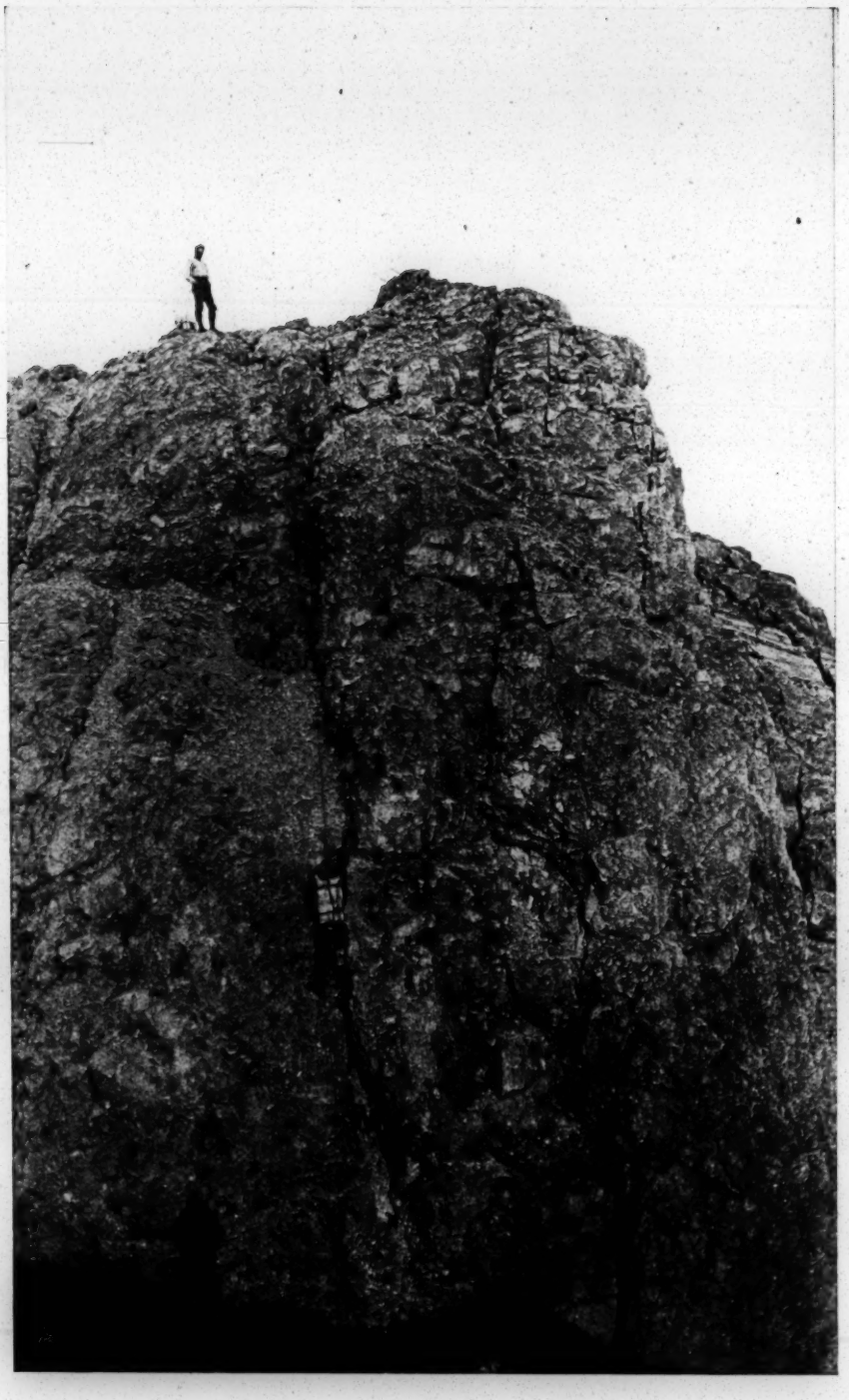
COOLING ROOM OF AN AMERICAN BAKERY, WHERE THOUSANDS OF LOAVES ARE COOLED BY PURE AIR

KATES NEEDLE, ALASKA

Note the woman's face outlined by the profile of the mountain (see page 176). Photo by Radcliffe Hordern, Alaskan Boundary Commission

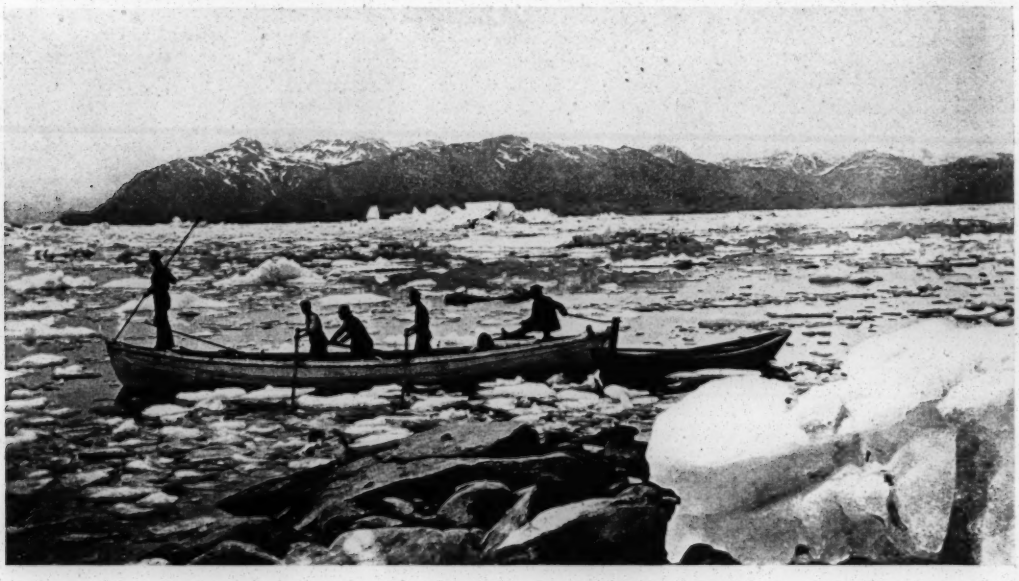
THE BRADY GLACIER

This view shows the face of the Brady Glacier in the upper end of Glacier Bay, and about 20 miles from the international boundary. This glacier runs through to the coast, sloping from its summit each way. No indication of recession was seen and its surface is so rough and broken up that it is quite impassable as far as observed. Photo by E. R. Martin, Alaskan Boundary Survey.



MARKING THE ALASKAN BOUNDARY

Some of the difficulties of triangulation. Climbing an almost vertical cliff by a rope. This cliff is almost 100 feet high, and affords the only means to reach the summit. The man on the rope has a theodolite on his back. This ascent had to be made five times before the necessary observations were completed. Photo by E. R. Martin, Alaskan Boundary Survey.

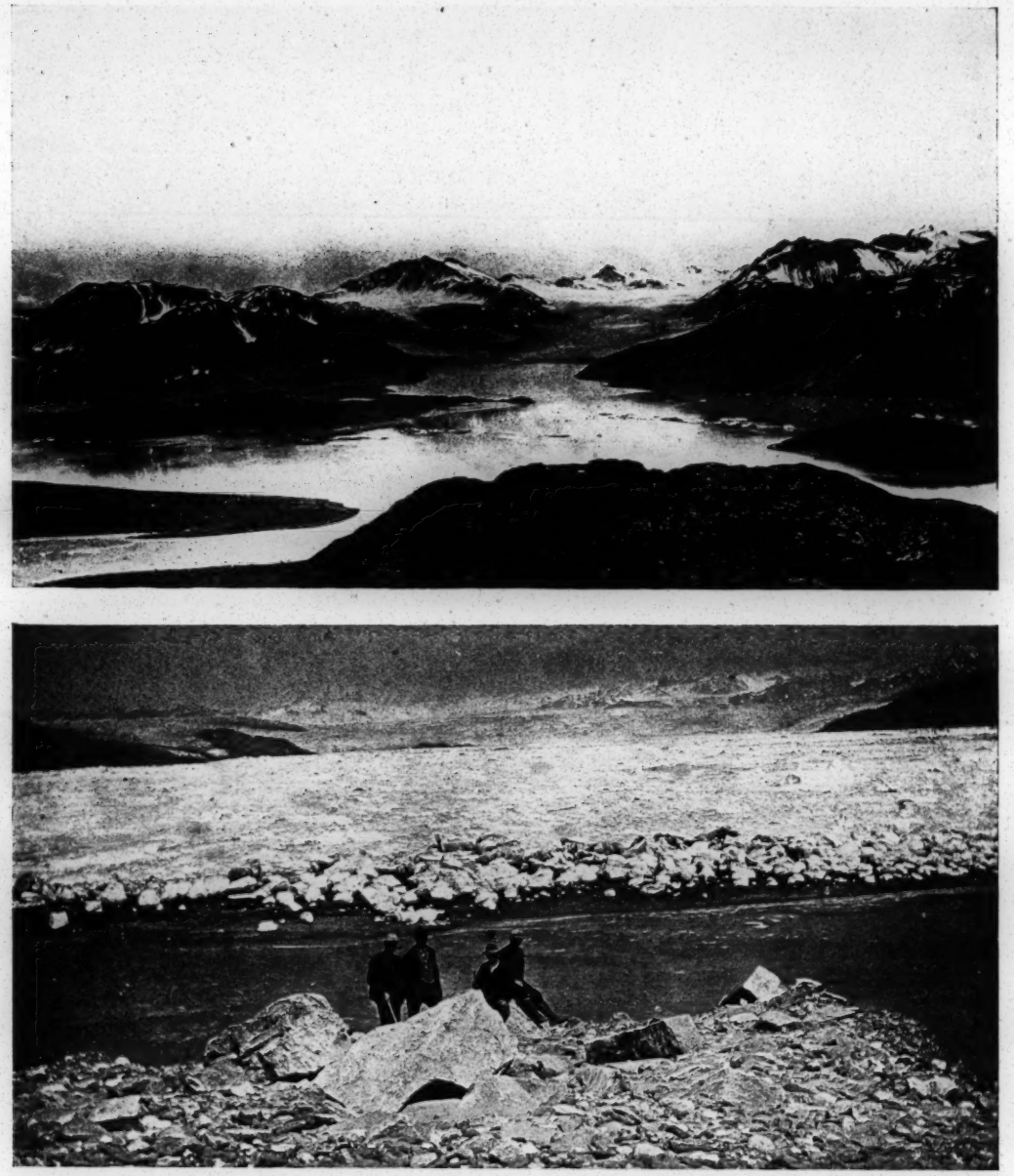


THE SURFACE OF THE "HUGH MILLER" GLACIER

No difficulty was found in traveling at will over this glacier

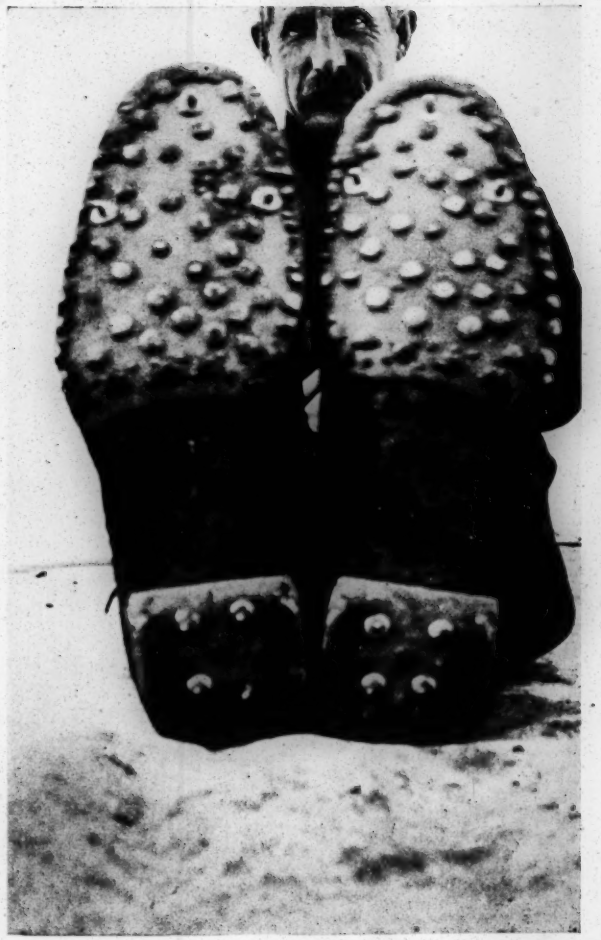
TRIANGULATION PARTY RETURNING FROM A TRIP TO A STATION NEAR THE MUIR GLACIER

This outfit spent fourteen successive hours working the boat through the floating ice. In eight of the fourteen hours no land was visible, and part of that time the bow of the boat was almost invisible from the stern. A dense fog covered everything, and the boat was navigated by a pocket compass. Some of the bergs were very large, and the fact that they break up and roll over without any apparent reason and without any warning, made this trip extremely dangerous. Photos by E. R. Martin, Alaskan Boundary Survey.

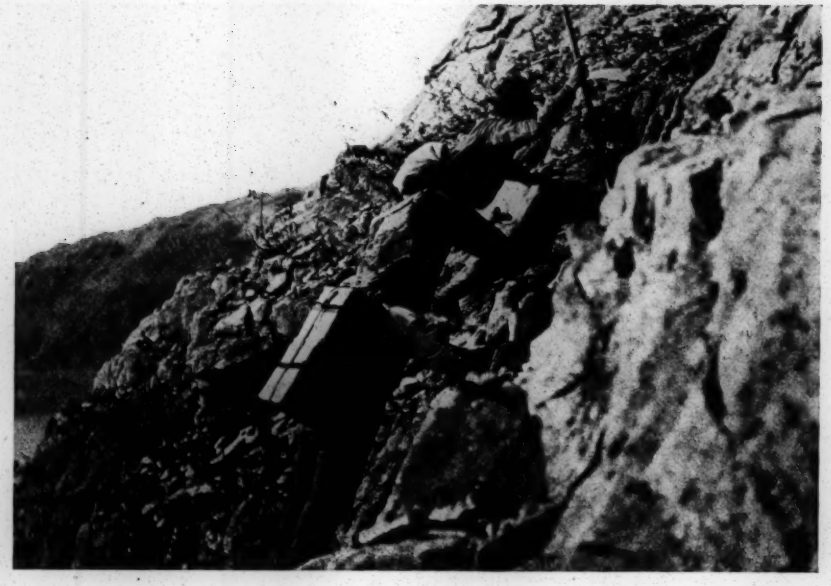


VIEW UP QUEEN INLET TOWARD THE BOUNDARY LINE—THE "CARROLL" GLACIER SHOWS IN THE BACKGROUND

The field of floating ice in front of the Muir Glacier and small bergs left on the beach by falling tides. The Muir Glacier formerly faced about where the group of men are seen, and had solid frontage clear across the inlet about 100 feet high. Now it is back several miles and slopes gradually down to the water. The earthquake of 1899 probably caused the ice to break off more rapidly than it usually did. Its former great beauty is now lost. Photos by E. R. Martin, Alaskan Boundary Survey.



A VIEW SHOWING HOW A SURVEYOR SHOULD BE SHOD WHO HAS MUCH TRAVELING TO DO ON ICE



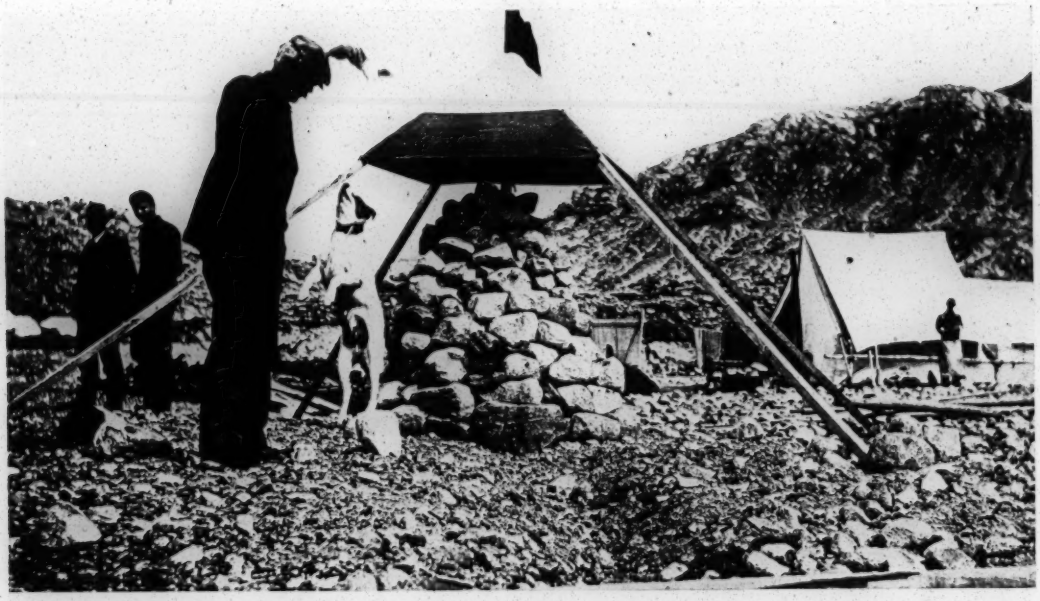
AN OBSERVING PARTY CLIMBING A VERY STEEP SLOPE TO A TRIANGULATION STATION

Good solid footing made this ascent quite easy and rapid. Photos by F. R. Martin, Alaskan Boundary Survey

SILK SLEEPING TENT, WEIGHT ABOUT 8 POUNDS, 9 X 10, SHOWING COTS AND SLEEPING BAGS

A TRIANGULATION PARTY EATING LUNCH ON A MOUNTAIN TOP

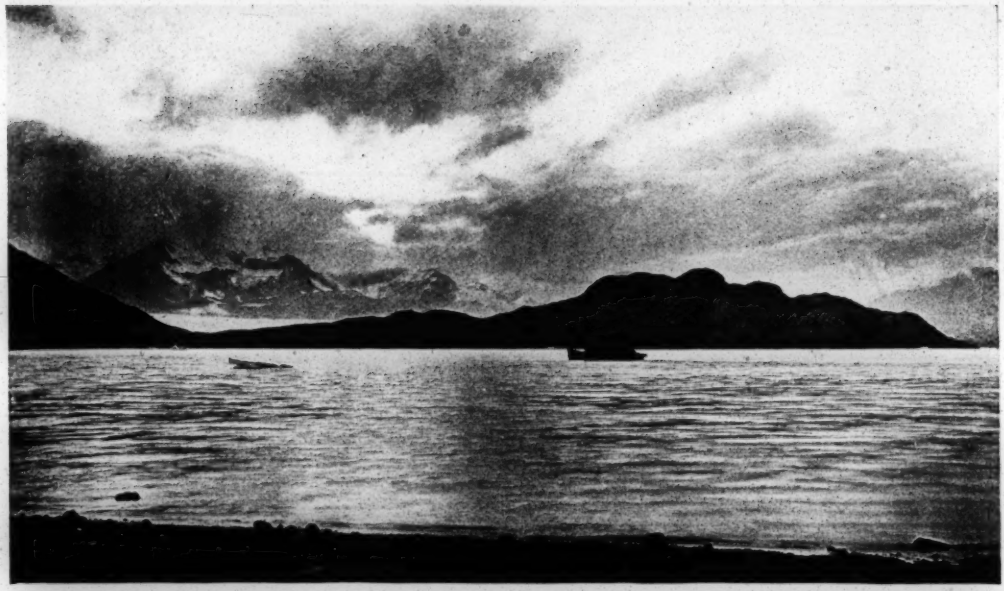
Not much style, but plenty of tea and substantials. Photos by E. R. Martin, Alaskan Boundary Survey

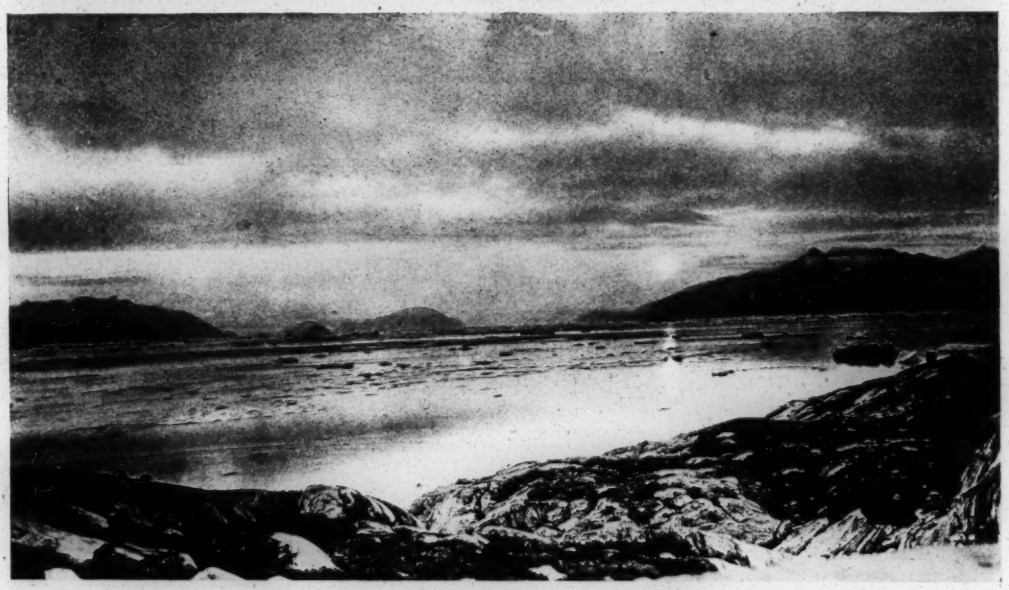


AN OBSERVING PARTY RETURNING TO CAMP FROM A TRIANGULATION STATION ON A SNOW FIELD WHICH IS A LITTLE SOFT FROM THE ACTION OF THE SUN

"CAMP DIVERSION"

The chief of parties feeding the pet of the outfit. A triangulation station signal and cairn, with the cook tent in the background. Photos by E. R. Martin, Alaskan Boundary Survey





SUNSET VIEWS IN JULY

These views were taken between 9.30 and 10.30 P. M. Photos by E. R. Martin, Alaskan Boundary Survey

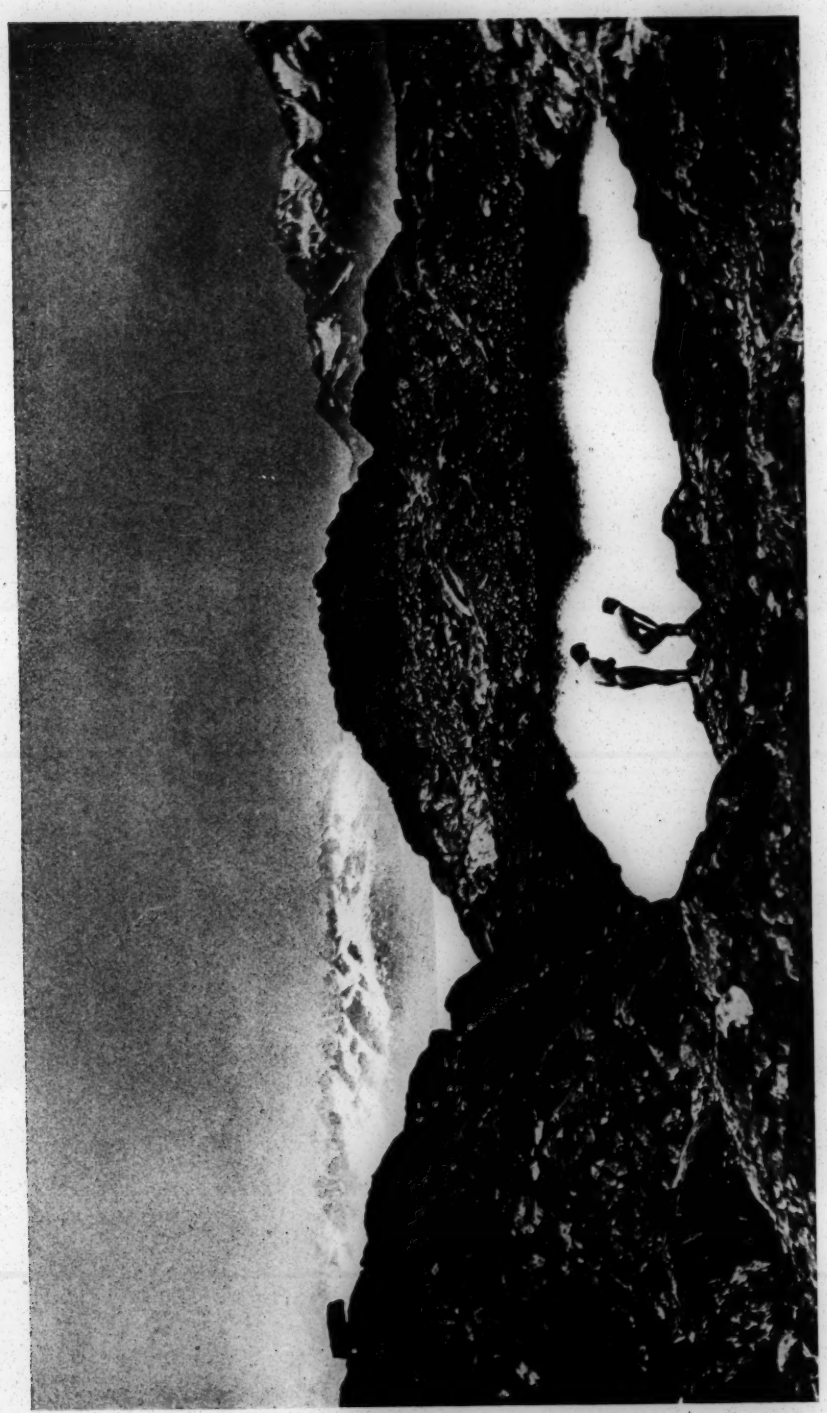


Photo by E. R. Martin, Alaskan Boundary Survey

TAKING A SWIM IN A POOL ON THE MOUNTAIN TOP

A DROWNED EMPIRE

By Robert H. Chapman

THE swamp issue has recently appeared upon the legislative horizon as a new and rather attractive proposition. Until very recently, federal reclamation of American morasses had not been considered seriously. The National Geographic Magazine last year published a general résumé of the drainage question by Mr H. M. Wilson;* but since then the subject has taken shape with great rapidity, until now it looks as though we might have within the very near future a second reclamation act, this time for the purpose of removing the excess water from, rather than supplying it to, agricultural lands.

In response to a Senate resolution, Secretary Garfield has recently transmitted to Congress an instructive report† on the work which the bureaus of his department have already done in connection with swamp and drainage matters. While the country generally has supposed that drainage, so far as it is related to the work of the federal government, is a new question, and that any information that Congress might want with respect to swamp lands would be forthcoming only after much investigation, it seems these bureaus have not only been for years making detailed surveys and studies of swamp lands of the United States, but the Department of the Interior has in several cases entered into actual drainage construction of large tracts in connection with irrigation projects.

Over twenty years ago the Geological Survey started a special investigation of the swamp areas of the country in the work of the late Professor Nathaniel S. Shaler, and his estimate of approximately 78,000,000 acres of wet lands east of the 100th meridian stands today as accurate, probably, as any figures yet produced. The fact, as stated in Mr Garfield's report, that between seven and eight million acres of swamps have been incidentally surveyed by the Geological Survey in connection with the general topographic survey of the United States directs attention to the great value of this class of work. One-third of the area of the country has already been covered topographically, and in this area where swamps occur these maps, taken in connection with the hydrographic and geologic investigations of the Survey, afford all the preliminary information required for determining the feasibility of drainage projects and for planning the broad features of construction.

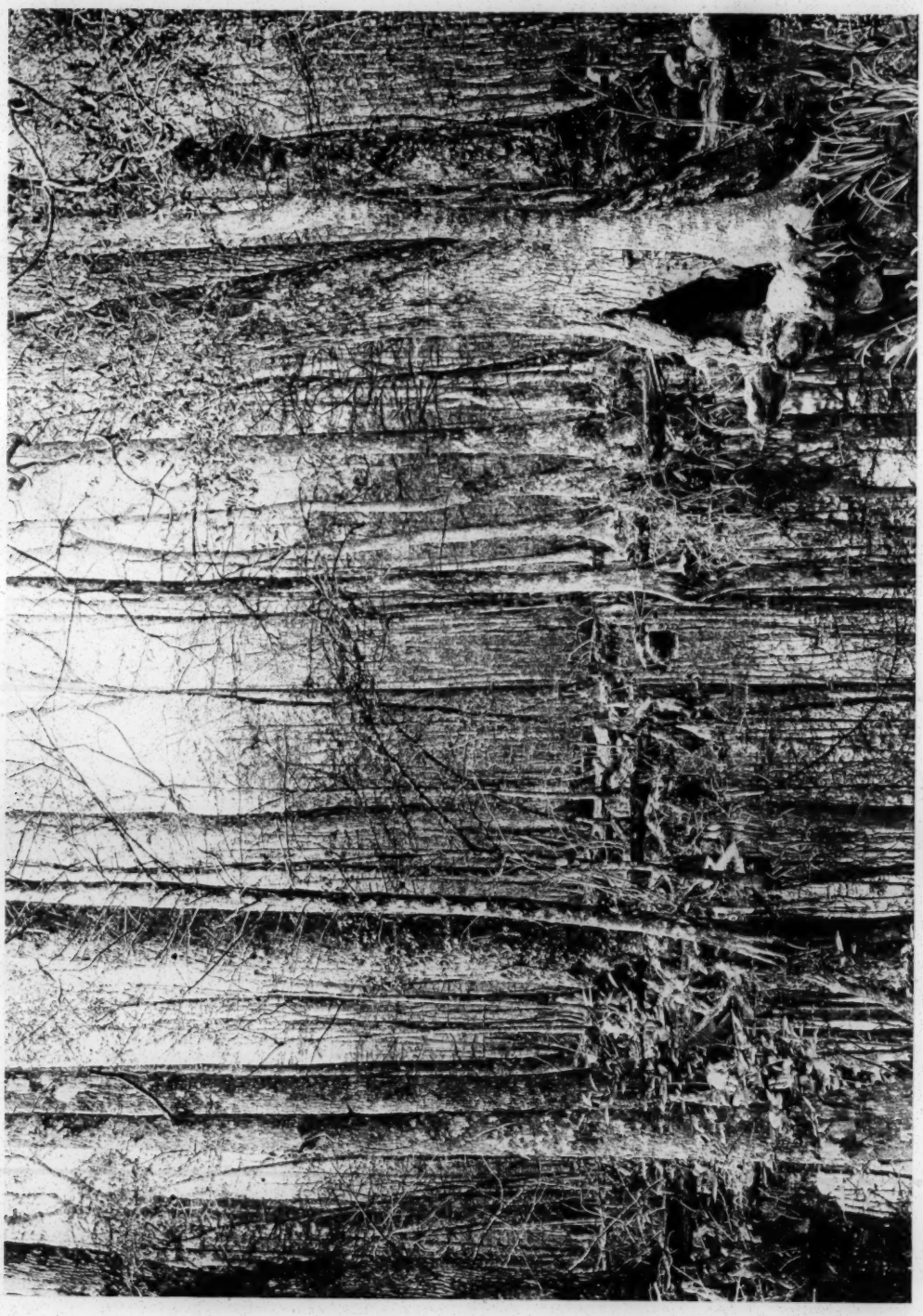
The reason that greater swamp areas have not been mapped is indicated by the fact that since the primary purpose of the topographic work of the Survey is to secure a base for the geologic map of the United States, the specific localities chosen for topographic surveys have naturally been those of greatest geological and mineral importance and have not included any great swampy regions.

Several special drainage surveys, however, are described, as, for instance, the work in the Sacramento Valley of California, where a coöperative survey is being conducted by the state and the government, the Geological Survey doing the work. In this case special maps, designed for reclamation purposes, are being made of the million acres of rich tule swamps, about two-thirds of the work having been completed. In this valley is located the greatest combined drainage and irrigation project in the United States, comprising a million acres of swamp and two million acres of reclaimable arid lands.

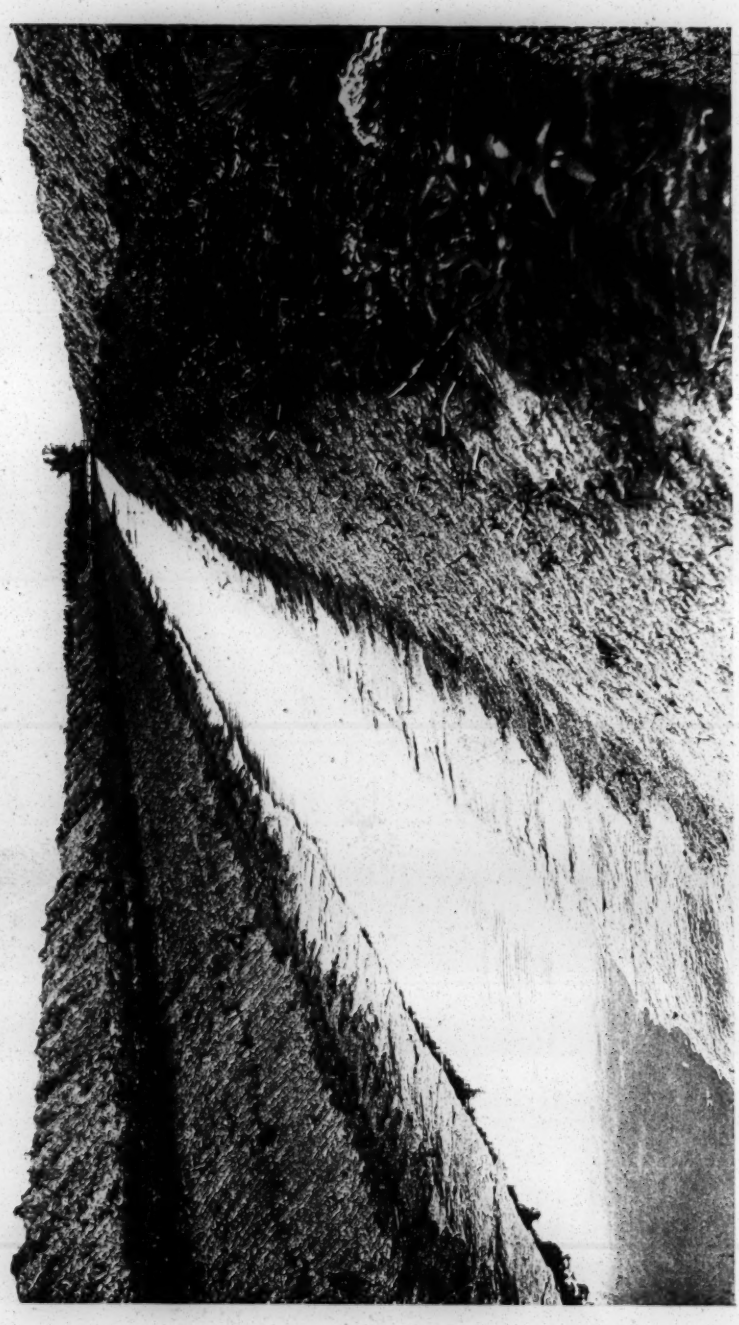
A special drainage survey is also being made in the upper Yazoo delta, Mississippi, under coöperative arrangement between the Geological Survey and the

* National Geographic Magazine for May, 1907.

† Senate Document No. 151.



SCENE IN DISMAL SWAMP—SOUTHERN MARGIN, NEAR ELIZABETH CITY, N. C.



A WELL CONSTRUCTED DRAINAGE DITCH—SIDE SLOPE PREVENTS CAVING AND EROSION

A POORLY CONSTRUCTED DRAINAGE DITCH—SIDES CAVED AND ERODED

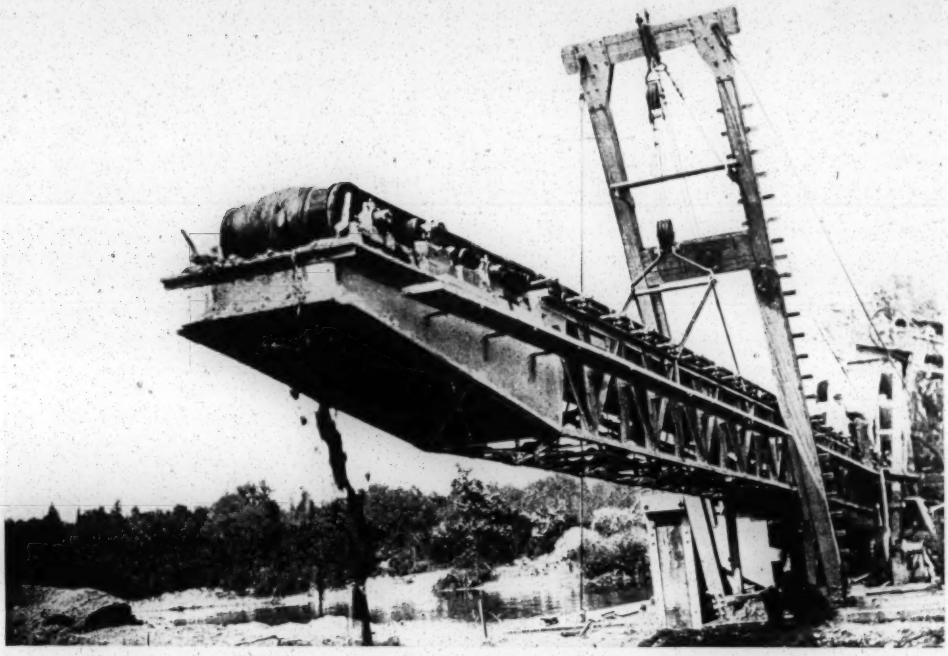
ROAD-MAKING ACROSS NEWLY RECLAIMED TRACT OF SWAMP LAND IN SACRAMENTO VALLEY

State of Mississippi. It is probable that construction work in this area will be undertaken by the formation of a drainage district, the fund necessary for this purpose to be raised by assessment of the land improved.

IMPORTANT PROJECT IN MINNESOTA

In northern Minnesota a very interesting problem is presented. Here the United States owns about 2,500,000 acres of land which the Chippewa Indians have ceded to the government, to be held in trust and disposed of for their own benefit. Without some improvement of the lands, however, there is little likelihood of the Indians realizing much of anything from them, since they constitute a vast swamp, with only here and there small patches of arable land. The settlers on these isolated tracts are as completely marooned during long periods as though located upon islets in the ocean. So Congress has authorized the survey of these lands with a view to determining the feasibility of their reclamation by drainage, and the Geological Survey has completed the major portion of the work and has even drawn detailed plans for the reclamation, by draining, of one portion of the swamp, known as the Mud Lake district. An amendment to the Indian appropriation bill has been proposed by Representative Steenerson of Minnesota allotting $1,000,000 for the drainage of this district, to be expended under the direction of the Secretary of the Interior.

Mr Garfield also directs attention to the very considerable drainage work that is being done by the Reclamation Service in connection with its irrigation problems in the West. In one instance, in the Klamath, Oregon-California, project, some 50,000 acres of swamp land will be reclaimed by drainage, and under an extension of this great project there will be at



TYPE OF CONVEYOR DREDGE USED IN CHANNEL-DEEPENING

least an additional 100,000 acres drained. The Secretary points out with commendable pride that in the event that Congress should require additional surveys or drainage construction work performed, his department has already two fully equipped bureaus, the Geological Survey and the Reclamation Service, ready at any day to extend the drainage work they are in reality already doing, and at the same time he calls attention to the fact that, considered in its entirety, the drainage problem is not as simple a one as many suppose. It involves the handling of one of the most powerful forces with which man has to cope and is a matter of the broadest practical engineering.

The various phases of the problem may be classified as follows:

1. Farm drainage.
2. Drainage and flood control.
3. Drainage, flood control, and navigation.
4. Tidal-flat drainage.

The first is the simplest form of the problem—the draining of a farm or group of farms into the nearest natural run-off channel.

The second and third are closely related and more complex, especially in the determination of engineering measures whereby disastrous floods may be prevented and the water uniformly distributed over low-water seasons, so that navigable stages in the rivers may be maintained.

The fourth comprises such lands as may require protection from both streams and the sea.

The preliminary engineering requirements in every case are in nowise different from those governing the irrigation of arid lands, the construction of inland waterways, the prevention of floods, the conservation of water, or any other important water-supply development. Such problems all involve engineering and physical factors the control of which may extend beyond the area immediately under consideration. There-

RECLAIMED SHIOCTON SWAMP, WISCONSIN—A CROP SAID TO BE 20 TONS PER ACRE

fore any great project of wet land reclamation is far above the plane of mere local ditching. If such work is to be prosecuted intelligently and purposefully, the actual construction must be preceded by topographic surveys, measurement of stream flow, consideration of necessary capacity of channels, and other physical studies. The actual development itself can be carried out only by a corps of competent engineers. In this connection Mr Garfield points out the danger of extensive drainage undertakings without a full consideration of all the factors. Swamps are in a way natural storage reservoirs, and they give off their waters slowly, and if large areas are drained it means that there will result a quicker run-off from the drainage basin, and the question must be considered whether the channel capacity of the natural arteries is sufficient to carry the increased flow, else the improvement of one reach of a basin may result in the overflow and destruction of another reach lower down.

The gauging of the streams in an area considered for draining and the determination of their maximum carrying capacity is therefore an essential part of the preliminary investigation. The value of figures of stream flow are much greater when they have been continued over long periods, and the work and records of the Water Resources Branch of the Geological Survey, which cover many years past, are invaluable.

One of the preëminent factors is the determination of the value of the reclaimed land. The crop it will best raise will give actual figures upon which to base estimates, and the careful attention which the experts of the Department of Agriculture are giving to soil surveys has a most valuable application to the subject.

An item for primary consideration is the maintenance and extension of the navigable waterways, which are directly under the control of the engineers of the U. S. Army.

The amount of work to be done is

DIFFICULTIES ENCOUNTERED IN SURVEY OF SACRAMENTO VALLEY (U. S. GEOLOGICAL SURVEY PARTY)

sufficient to keep the several branches of the government each hard at work on the particular problem it is best fitted to do, and calls for the most earnest and hearty coöperation of all.

PUBLIC DEMAND FOR NATIONAL DRAINAGE

The apparent popularity of the national drainage issue is evidenced by the large number of bills that have been introduced in Congress at this session, while very substantial progress has been made in the way of proposed legislation. The Senate Committee on Public Lands has considered and digested the various bills and has unanimously reported to the Senate, with favorable recommendations, a comprehensive measure. It is predicted by the author of the bill, Senator Flint, of California, that it will undoubtedly pass the Senate in the near future. What its fate will be in the House remains to be seen. It is believed that the majority of the members of that busy body favor national drainage enactment, but it is a question whether the bill will be allowed to come to a vote.

The provisions of the bill are in the main as follows:

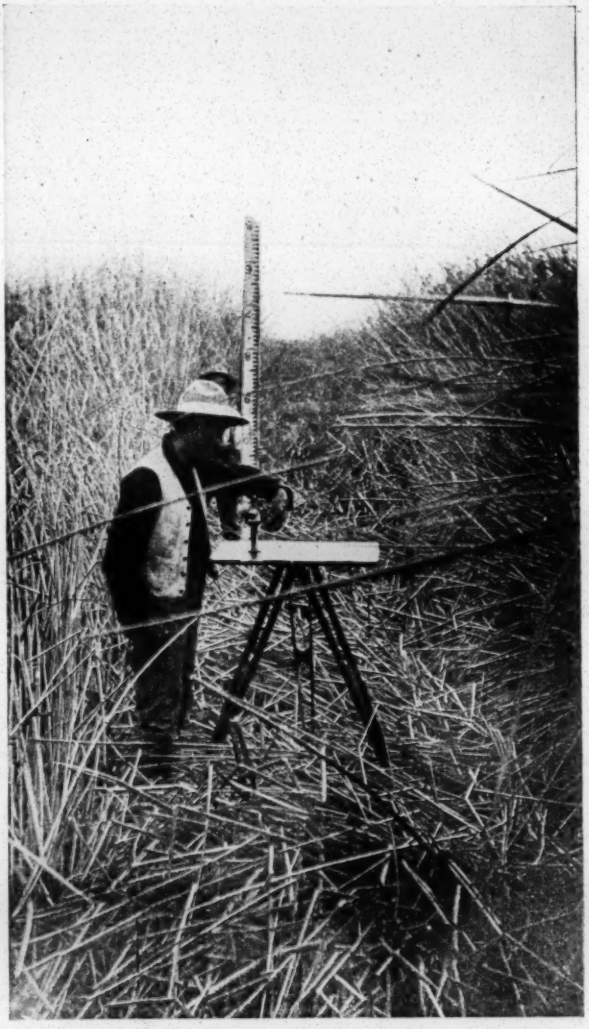
The proceeds from the sale of public lands in the non-arid public-land states (those not contributing to the national irrigation fund) are appropriated as a "drainage" fund, dating back to June 30, 1901, in order to give drainage an even start with irrigation. The work of drainage reclamation is to be carried out by the Secretary of the Interior, who is given wide discretion in the premises; among other features, he is empowered to

MINNESOTA SWAMP SURVEY (U. S. GEOLOGICAL SURVEY PARTY EN ROUTE)

HAND-DITCHING BY CONTRACT LABOR, HOLBECK'S SWAMP, NEAR CHARLESTON, S. C.

subdivide the reclaimed tracts into farm units of from 5 to 160 acres. It is now recognized that the minimum unit of 40 acres, under the irrigation act, is, under certain conditions of great fertility and productivity of soil, far in excess of what constitutes an adequate area for a farm home, where a man may make a comfortable living for himself and family. The cost of the drainage construction is to be charged against the land reclaimed, as under the irrigation act, and is to be repaid into the drainage fund in not to exceed ten annual installments. To secure this repayment the government is to have a first and paramount lien on the land. Where other than public lands are reclaimed the loan of the money from the drainage fund is to be upon the bonds of the state, the municipality, or drainage district and secured by lien on the lands. There is to be no commutation of homesteads in case of the reclamation of public lands.

The bill is thus seen to closely follow the general principles underlying the irrigation act—the money is obtained from the sale of government lands, so that the appropriation is automatic; the fund, through the return to it of the cost of construction by the land-owners, becomes a revolving one, and most of the details of execution are left to the Secretary of the Interior.



TOPOGRAPHER AT WORK IN TULE SWAMP OF SACRAMENTO VALLEY, CALIFORNIA

Under this measure national drainage would begin existence with not less than six million dollars, the receipts from the sales of lands in the states included under it having been from 1901 to June 30 1907, $5,813,258. Since the Secretary of the Interior is not restricted in making requirements for the repayment of the cost of construction, it is probable that in such cheap reclamation work as is estimated for in the Mud Lake district, where the cost will be less than $3 per acre, he will provide for the repayment to the fund in a shorter period than the maximum 10 years. In this event the money would be available for a second use in possibly five years from the completion of the project and settlement of the land.

To save a person from drowning calls for more or less heroism in every case. To win from the realm of the powerful Water King a flooded and perishing empire as large as that of Great Britain and Ireland, and so furnish homes for men, women, and children, requires careful study, intelligent direction, and unceasing labor.

HAITI: A DEGENERATING ISLAND*

The Story of its Past Grandeur and Present Decay

By Rear Admiral Colby M. Chester, U. S. Navy

GEOGRAPHICALLY, the Island of Haiti, including within its limits the two republics of Santo Domingo and Haiti, is in the class of the most favored of nations. Situated on the Western Continent about midway between its two grand divisions of North and South America and abounding in natural resources, it might be an emporium for each, if its inhabitants were of as high an order as the country itself.

The general sailing directions for ships bound from New York to almost any part of the Greater Antilles, or to the north coast of South America, require a course to be steered due south on the seventy-fourth meridian of longitude, which passes Watlings Island, the San Salvador of Columbus, close aboard, and leads into the Caribbean Sea between the islands of Cuba and Haiti; thence a slight change of course to the westward takes the ship to the future entrance of the Pacific Ocean—the Panama Canal. Thus, ships from our own metropolis visiting the neighboring ports, in which we are most interested, will pass close to the "Gem of the Antilles."

The name Haiti, or "High Island," is significant of the character of its topography. "Sire," once said a British admiral to his king, George the Third, when asked about the island, "Haiti looks like that," and he crumpled up a piece of paper and placed it upon the table. A brief description though this may be, it well fitted the case. The island is about 400 miles long, 150 miles wide, and is about the size of the State of New York. It is irregular in shape and is intersected by three chains of mountains.

Haiti has a climate peculiar to itself. While it is dominated by the usual hot and dry seasons of the tropics, some of its high peaks, which extend nearly up into the snow limits of the atmosphere, seem to draw from the trade winds which sweep across their summits the moisture, which is precipitated almost daily for a short time, and thus the dry season is robbed of its drought-affecting proclivities.

THE ORIGINAL SEAT OF PARADISE

Only one opinion seems to exist in the minds of historians concerning the general salubrity of the climate, the productiveness of the soil, and the beauty of the scenery of this remarkable island. "In the delightful vales," says Raynal, "all the sweets of spring are enjoyed without winter or summer. There are but two seasons of the year and they are equally fine. The ground, always laden with fruit and covered with flowers, realizes the delights and riches of poetical description. Wherever we turn our eyes we are enchanted with a variety of objects colored and reflected by the clearest light. The air is temperate in the daytime and the nights are constantly cool." Naturally this account refers particularly to places on the island where foreigners are wont to congregate, but it also accords well with my own experience there.

The memory of a night spent in the hills above Port-au-Prince, where this description strictly applies, is frequently in my mind. Here, after a night of rest, the new day began with a swim in a beautiful pool of mountain water which ran through the lower part of our host's house; and this, accompanied by gentle breezes wafting sweet odors and mingling with the song of birds,

* An address to the National Geographic Society.

made the place enchanting. As I gazed upon the beauty of the picture presented to me, I could well understand Columbus' enthusiasm and boast that he had discovered the original seat of Paradise.

Historically, Haiti, or Santo Domingo, is the senior of our own country, if we leave out of consideration the legendary reports concerning the visits of the Norsemen to our northern coasts 800 years ago, and we are somewhat indebted to this beautiful island for our own development.

It appears providential that Columbus should have been led to this Eldorado of his day to make his first settlement, when so many other localities seemed to be the pole to which his compass pointed, for here he met a less warlike people than he would have found in the north, and the latter might have blotted out of existence the spark of exploration which was started by this first expedition to the New World. We know that the dread of cold weather was primarily responsible for his abrupt change of course to the southward, although the glittering prospect of gold which the aborigines led him to believe might exist in the larger islands to the southward had its marked influence on his selection of a route to follow. But Columbus' own brief account of his voyage, as given in his letter to his friend and patron, Luis de Santangel, dated February 15, 1493, explains so well his reasons for his abrupt change of course from the west to the eastward again, and also gives such a fine description of the land he found, that I shall quote a portion of it here:

COLUMBUS' SPANISH LETTER TO LUIS DE SANTANGEL

"SIR: As I know you will have pleasure of the great victory which our Lord hath given me in my voyage, I write you this, by which you shall know that in thirty-three days I passed over to the Indies with the fleet which the most illustrious King and Queen, our Lords, gave me, where I found very many islands peopled with inhabitants without number. And, on them all, I have taken possession for their Highnesses, with proclamation and the royal standard displayed; and I was not gainsaid. On the first which I found I put the name of Saint Salvador, in commemoration of His High Majesty who marvelously hath given all this; the Indians call it Guanahani. The second I named the Island of Santa Maria de Conception, the third Ferrandina, the fourth Isabela, the fifth Isla Juana; and so for each one a new name. When I reached Juana (Cuba) I followed its coast westwardly and found it so large that I thought it might be the mainland province of Cathay. . . . At the end of many leagues, seeing that there was no change, and that the coast was bearing me northwards, whereunto my desire was contrary, since the winter was also confronting us, I formed the purpose of making from thence to the south, and as the wind was also against me, I determined not to wait for other weather and turned back as far as a port agreed upon (probably Gibara). . . .

"I understood sufficiently from other Indians whom I had already taken that this land, in its continuousness was an island; . . . from its headland I saw another island to the east eighteen leagues distant from this, to which I at once gave the name La Spañola. And I proceeded thither and followed the north coast, as with La Juana, eastwardly for a hundred and seventy-eight great leagues in a direct easterly course, as with La Juana. The which, and all the others, are most strong to an excessive degree and this extremely so."

HAITI AS COLUMBUS SAW IT

The route as described by Columbus seems then to have led him away from the western course, and he thus stumbles almost on the finest island of the group into which he had entered. His letter, continuing, tells of his first impression of the beautiful island; and as he found it,

so may we see it today, if we shut out the black picture which is the product of his countrymen's avarice.

"In it" (Haiti), he says, "there are many havens on the seacoast, incomparable with any others I know in Christendom, and plenty of rivers so good and great that it is a marvel. The lands there are high, and in it are very many ranges of hills and most lofty mountains incomparably beyond the Island of Centrefrei (or Teneriffe); all most beautiful in a thousand shapes and all accessible, and full of trees of a thousand kinds, so lofty that they seem to reach the sky. And I am assured that they never lose their foliage, as may be imagined, since I saw them as green and as beautiful as they are in Spain in May and some of them were in flower, some in fruit, some in another stage, according to their kind. And the nightingale was singing, and other birds of a thousand sorts, in the month of November, round about the way I was going. There are palm trees of six or eight species, wondrous to see for their beautiful variety; but so are the other trees and fruits and plants therein. There are wonderful pine groves and very large plains of verdure, and there is honey and many kinds of birds, and many mines in the earth; and there is a population of incalculable number. Española is a marvel; the mountains and hills, and plains, and fields, and the soil, so beautiful and rich for planting and sowing, for breeding cattle of all sorts, for building of towns and villages. There could be no believing, without seeing, such harbors as are here, as well as the many and great rivers and excellent waters, most of which contain gold. In the trees and fruits and plants, there are greater diversities from those of Juana (Cuba). In this there are many spiceries and great mines of gold and other metals. The people of this island and all others that I have seen, or not seen, all go naked, men and women, just as their mothers bring them forth." . . .

THE LAUGHING NATIVES LONG SINCE EXTERMINATED

The tribute which Columbus pays to the natives in continuing his narrative would satisfy even Bellamy's ideals as expressed in his "Looking Backward." I should like to quote all of his letter for the benefit of those who have not been so fortunate as to read it, but space does not permit. A paragraph or two will give the gist of his ideas.

"It seems to me," he says, "that in all those islands the men are content with a single wife. . . . Nor have I been able to learn whether they hold personal property, for it seemed to me that whatever one had, they all took share of, especially of eatable things. . . . I have not found any monstrous men, but, on the contrary, all the people are very comely; nor are they black like those in Guinea, but have flowing hair; and they are not begotten where there is an excessive violence of the sun. Of anything they have, if it be asked, they never say no, but do rather invite the person to accept it, and show as much lovingness as though they would give their hearts. And they know no sect or idolatry, save that they all believe that power and goodness are in the sky, and they believe very firmly that these ships and crews come from the sky; and this comes not because they are ignorant; on the contrary, they are men of very subtle wit, who navigate all these seas and who give a marvelously good account of everything."

We do not wonder when reading his full description that he called this spot the Garden of Eden. Would that we could look on the inhabitants of this beautiful island now as Columbus depicted it; but, alas! since his time a sad change has gradually crept over the island, so that now foreigners shun it as they do a pestilence.

In reading the history of its people since the extinction of the aborigines our hearts sicken and we are appalled by the revelations there disclosed.

Its pages are black with the marks of

blood shed and crime committed, not alone by the ignorant and superstitious, but more especially by those of intelligence and education, and even our own race is not altogether blameless or wanting in responsibility for this condition of things.

On Saint Nicholas Day (December 6), 1492, Columbus entered a port at the extreme west end of the Island of Santo Domingo or, as the whole island was then called by the aborigines, Haiti. The natives themselves called the port Bohio, but Columbus christened it, in honor of the day he was celebrating, Port Saint Nicholas, the name still existing as Saint Nicholas Mole. This date will ever be memorable in the annals of the Haitiens as marking the beginning of the history of the island.

Columbus now called the island Hispaniola in honor of the country which had sent him forth to discover it, and it is to be regretted that this name given by the immortal discoverer has been lost, for its present two names are conflicting and confusing.

The small squadron which formed Columbus' expedition to the New World had come the whole distance across the ocean intact, but off the coast of Cuba the captain of the ship *Pinta* deserted with his ship and left him only the flag-ship *Santa Maria* and the small *Nina* to continue the voyage. Speeding on as rapidly as the difficult navigation would permit, the two ships came to anchor off a small village now known as Port de Paix, which was so beautiful a spot that he called it the Vale of Paradise. Here Columbus opened communication with the Indian King or Cacique Guacanagari, who ruled one of the five principal divisions of the island and who sent him presents of gold and assured him that more could be found farther to the eastward. Columbus had no doubt at this time that he had reached the Asiatic continent, and he was anxious to return and report his good fortune to his king and queen. But unfortunately soon after leaving Port de Paix his flag-ship, the *Santa Maria*, drifted upon a shoal and became a total wreck.

THE FIRST SETTLEMENT IN THE NEW WORLD

As the better part of his force was embarked on board this ship, his position was most precarious, and he was forced to at once build a fort on shore and leave in it a large portion of his men for a garrison.

The wreck occurred near the present port of Cape Haitien, on Christmas eve, 1492. The hospitable natives lent willing hands, and Columbus soon had the fort constructed from the salvage of his ship near a village then called Guarico. This he named the Fortress of Navidad; and this was the first structure built in America. Soon after the fort was completed he left it with a garrison of 30 men and, proceeding to the eastward, he was fortunate to again fall in with the *Pinta*, which vessel had deserted him in Cuba, and in company with that ship he returned to Spain to make his report.

His grateful sovereigns soon fitted him out again with a force of 17 ships and several hundred men to carry on his explorations from Fort Navidad, and among those who enlisted for the voyage were a large number of his wealthy countrymen, who cast in their lot and their fortunes with him in order to gain a share of the golden prize which the Admiral assured them was within their grasp. But, as is usual where avarice is the ruling spirit, troubles grew faster than riches. His first great misfortune after his return was to find that all of the garrison he had left at Navidad had been slain by the natives of the interior, notwithstanding his good friend Guacanagari had defended them with such gallantry as to produce the almost entire destruction of his own people.

Columbus then determined to build a permanent settlement, and after reconnoitering he selected for this purpose a site on an elevated plain near a spacious bay on the north coast of the island. Here was established the first town in

the New World, which was dignified by the name of his queen and patron, Isabella.

The position of the town had the only advantage of being contiguous to the gold country, which was the real objective of the party; consequently the center of activities was soon transferred to other parts of the island, and Isabella became only a name with a few ruins to show from whence the first expedition into the interior had started.

Leaving a small force at Isabella, Columbus set out for the gold fields in the interior which he had been led to believe existed there. Passing up the banks of the river Bijo-Bonico, he crossed the mountains through a pass which he called El Puerto de los Hidalgos, or "Gentlemen's Pass," in honor of the gentlemen who composed his party. Here opened out the beautiful Yaqui Valley, through which flows the river to which he gave the name of the Rio del Oro, or River of Gold. The valley he called Vega Real, or Royal Valley, as it was the most beautiful he had ever seen.

The natives, resenting the intrusion of the foreigners, swarmed in great numbers to contest their passage into the gold fields; but the unarmed hosts of the island were no match for the disciplined troops of Spain, and they were overcome and slaughtered in great numbers. A fortress was established on the Janico River, called Saint Tomas, which the natives attempted to take with such disastrous results that they gave up for a time all further resistance to the conquerors. Columbus was now fully satisfied that he had reached the Cipango of the East Indies, for which place he had originally set out.

AN UNHAPPY MARRIAGE

But the course of empire was still south, and soon Santo Domingo City became the center of the colonial activities.

A little love affair connected with the growth of this city is interesting in this connection. One of the Spanish party, Miguel Dias, having gotten into difficulty with an officer, severely wounding him in combat, fled to escape punishment. Finding shelter in an Indian village and being received with much cordiality and hospitality, he in return gave his heart to the young Caguisas, who was then governing the tribe. His protestations met with favor, and the young Spaniard soon found himself the consort of a queen of no mean accomplishments. But he soon wearied of his environment and sighed for his old companions. The queen, seeing his discontent and fearing to lose him, gave him the secret of her vast wealth and, loading him with the precious metal, sent him back to the Spaniards to induce them to return with him and settle in her country. Dias delivered this message to Columbus, who immediately ordered an exploration of that part of the island to ascertain the truth of the Spaniard's report.

The sequel to this little love affair is also interesting, but most pathetic. Zamcaca, after giving her all to her lover, who was thereby promoted to high honors in the colony, being the first alcalde of the new city, was so disheartened by the cruel treatment accorded her people that she fled from civilization and affluence to the wilds of the forests, leaving her two children and still faithful husband to mourn her loss, and was never heard from again.

From this origin, so casual and domestic, arose the first permanent city of the New World.

Thus the Spaniards were drawn to the south of the island, where they built a fort called New Isabella, and Columbus, who was about to return to Spain, was so impressed by the glowing accounts of the section given him by his men that he ordered his brother, Don Bartholomew, to select a site and build a town. A place was chosen on the banks of the Ozamas River, and here arose the first permanent city of the New World, which was named Santo Domingo, after Columbus' father.

Soon after the Great Admiral took his departure for Spain, discord became rife among his subjects, and, this eventually

developing into open mutiny, there was inaugurated a rebellion against the powers that be which, repeated from time to time, has made up the principal history of the island to this day.

THE OLD SPLENDOR OF SANTO DOMINGO

In a short time the city of Santo Domingo became one of great importance, and is described as not inferior to any in Spain. When at last Don Diego Columbus, to whom the great discoverer, now dead, bequeathed his rights as well as his perplexities, became the ruler of the province, he set up a court which vied in splendor and magnificence with that of the king himself. Diego's ambition was to build such a capital here as would correspond in greatness to the New World his father had discovered and to the fame and dignity of his family. The court of his young and beautiful queen was thronged by a circle of attendants from her own class in Spain which professed to be the best blood of Castile. Magnificent public buildings were erected, the cathedral was highly endowed and built with artistic taste, while the monasteries were made monuments to the Christian sentiment of the foreigners.

The richness and abundance of gold found in the rivers of the island at first brought great wealth to the Spaniards; but it was soon recognized that cultivation of the soil was of more value than the mines, which could only be profitably worked with the means then extant as long as the gold was found on the surface, and hence agriculture became the principal industry of the islanders. But the gentlemen from Spain were too proud to labor themselves, and being anxious to gain fortunes in a short time, they drove the Indians beyond their strength, and they died in rapidly increasing numbers. Thus was killed the goose which laid the golden egg, for without the laborers the masters became land poor. The old feeling of sedition and discontent still existing in the hearts of the colonists, together with the loss of labor, soon produced a condition of things that was most unpromising for the future welfare of the colony.

King Ferdinand, at first jealous of the Columbian dynasty and the rising importance of Hispaniola, now began to realize but little on his investment, and he soon lost interest in the administration of the colony and devoted his attention to the discoveries in other parts of the New World.

The most redeeming feature in the Spanish control of Hispaniola was the struggle of Las Casas, the celebrated bishop of Chiapa, to save the natives, to whom the island rightfully belonged, from the utter annihilation to which the brutal system of slavery inaugurated by his countrymen was fast driving them. In his vain endeavor to alleviate the sufferings of the aborigines he went even so far as to be credited with introducing into the island the inhabitants of Africa, who had become objects of barter between the Portuguese and other European states, and thus was established the slave trade in America—a curse that was quite as injurious to the well being of the island as the one he endeavored to overcome.

RIVALRY OF ENGLAND AND FRANCE FOR HAITI

The history of Santo Domingo during the 16th century can hardly be given here, even if it were sufficiently important to warrant its repetition. Suffice it to say that the destruction of the aborigines was now complete and the colony rapidly degenerated in wealth, but the power represented in the control of all the colonies belonging to Spain became the envy of her European sisters.

In the early part of the 17th century the English and French combined to secure a portion of the growing wealth of the New World, and this resulted in establishing in 1630, on the neighboring Island of Tortuga, a band of robbers which carried on piratical operations in its worst form. Then, becoming more powerful, they began depredations on Hispaniola, finding that hunting its vast and verdant fields, which abounded in

cattle, to be more remunerative than cutting the throats of their victims on the sea.

The discord that naturally followed this copartnership eventually resulted in the French buccaneers gaining the mastery over their British allies, forcing the latter to take up their abode on the Island of Jamaica, and thus leaving the French in possession of the Island of Tobago, and naturally the northern coast of Santo Domingo also came under French jurisdiction.

AN UNDESIRABLE ELEMENT

From now on the French in the west and Spanish people in the east wrestled in almost continuous strife for the mastery of Santo Domingo, thereby checking for a while the progress of the island and disposing the inhabitants to laziness and vice. It should be noted that unlike the American continental emigrants, the West Indian voyagers went forth to seek gold only and had no thought of making permanent settlements. They therefore left behind them their sweethearts and wives, to whom they expected to return, and in order to increase the value of the French possessions there were introduced into the island at this time a class of women who were but little better than the buccaneers themselves. The mingling of the blood of this refuse of European civilization gave to their descendants characters as low as can exist in human nature, and to this fact is largely due the present condition of the people here.

In 1776 the line of demarkation between the French and Spanish portions of the island was defined practically as it exists today. After this settlement of the boundary question the different colonies became more friendly and business between them increased, until finally, by the treaty of Bôle, signed July 22, 1795, France came into possession of the whole island; but the formal abandonment of the Spanish government of its control did not take place until January 27, 1801.

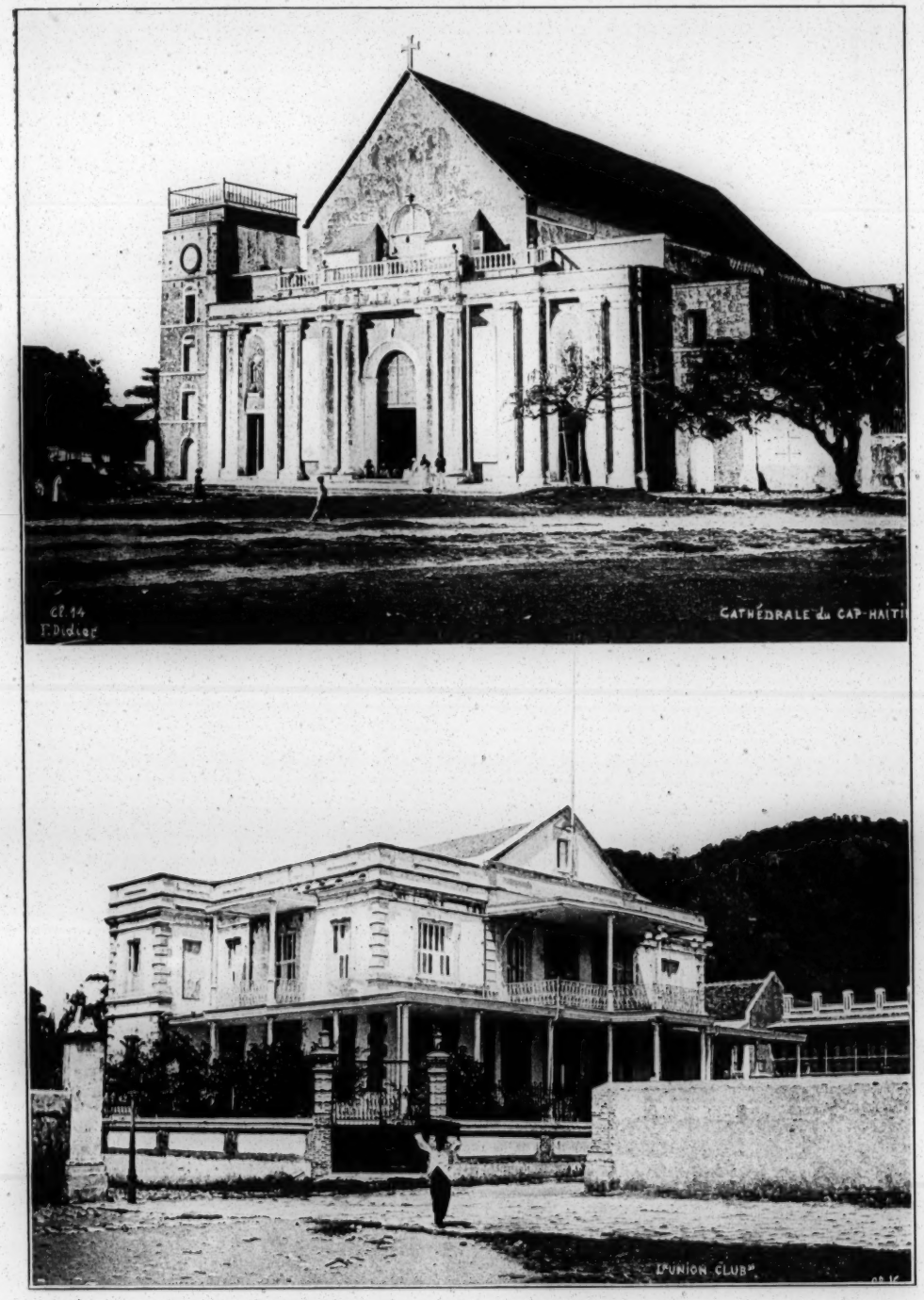
THE DIFFERENCE BETWEEN HAITI AND SANTO DOMINGO

Although the whole island was now under French rule, the two parts, east and west, were irremediably separated by the interests of the different races. In the eastern section the foreigners were in numbers about as one to four of the negroes; in the western section of the island the proportion of the blacks to whites was much larger—at least 15 to 1. This disproportion of numbers in the races accounts for the continued domination of the whites in the east, while the western portion of the island later became the Black Republic.

Following the French supremacy, Haiti proper rapidly rose in the scale of prosperity, becoming the principal colonial gem in the French crown; but its progress was founded upon an insecure base and a fall was inevitable. It is said that fourteen hundred vessels were employed in its trade, which was about two-thirds of the whole external commerce of France.

Among the mulattoes, or free men of color, were many of intellect and refinement, who had been well educated in France, such as Rigaud, Baurais, Petion, Borgella, and Dumas, the father of the celebrated novelist, and although they were few in number, such men aspired to a legal and civil equality with the whites, and in striving for this they naturally felt little sympathy with the slave population and refused to connect themselves with them until too late. To harmonize all the conflicting interests of this mixture of races was beyond the capacity of the colonial government.

When the French Revolution finally broke out in France, throwing the whole of Europe in consternation, it found the French colonists quite ripe for a similar outbreak. About eight hundred of the mulattoes in Haiti had enlisted under the name of the Royal Chasseurs and accompanied Count d'Estaing in his expedition to Savannah during the war of the American Revolution, taking part in our



CATHEDRAL AND UNION CLUB, CAPE HAITIEN

CITIZENS OF CAPE HAITIEN

own struggle for freedom, which strengthened the desire of the Haitiens to secure their own independence. Following the example thus set by both France and America, there broke out that fierce strife known as "The Horrors of the Negro Insurrection in Santo Domingo," which has so darkened the pages of history.

It should not be forgotten, however, that the fearful cruelties practiced during this insurrection were equally shared by both black and white, all parties seeming to vie with each other in the excess of atrocities. Unlike their continental friends, who were generally actuated by a common impulse, the interests of the islanders were hopelessly divided. The population consisted at this time of about 30,000 whites, mostly planters, who had been made wealthy by the labor of the slaves; but they were separated into irreconcilable factions. Second, there were, about the same number of mulattoes, many of them property-owners, whose social, industrial, and legal rights had been restricted to a humiliating degree by the Royalists. Third, there were nearly 500,000 black slaves, who were groaning silently under a cruel form of bondage which they sought to shake off.

TOUSSAINT L'OUVERTURE

Soon after war broke out there appeared upon the scene of activities that wonderful character, Toussaint L'Ouverture, who wrested the command of the army from his superiors, Francois and Baisson, and as a French general finally led the troops to victory.

At first Toussaint was appointed a surgeon to the army, as he had some knowledge of simple medicines, which had given him great influence on his master's estate, and he used this knowledge for the benefit of the insurgent forces to good advantage.

This genius, as he may properly be styled, was a slave, at first known as Toussaint Bieda, from the name of his master's estate, and later as Toussaint L'Ouverture, by which he is known in history, owing to the fact that he had overturned the government.

He was born about 1746, of negro parents, his father being an imported African and, as stated by tradition, the son of a chief. Delicate as a child, the nickname of Fatras-Baton, or "Little Lath," as it has been translated, was given him. Although small and insignificant in person when young, he later became possessed of great strength and endurance. He had received in youth some education from a brother slave, and knew how to read and write and speak the French language as well as the creole patois, and it is said had some knowledge of drawing. He was fifty years old at the time of the insurrection.

This really remarkable man, who, considering his education and environments, has not been inaptly compared to Washington and Napoleon, was now to find himself the master of the island. Beloved to the point of enthusiasm by the negroes, who had raised him to the dignity he enjoyed, he was honored and respected by public representatives of other nations with whom he had dealings.

When there was a lull in the strife which gave him relief from military cares, he devoted his whole time to the arts of peace, and the policy of his whole administration was characterized by the same sagacity and prudence which had distinguished his exploits in the field. He restored the planters to their estates and pushed forward the cultivation of the soil, realizing, as does Booker Washington, the negro chieftan in the United States, that the salvation of his people was occupation for mind and body, and that the land was given them as a talent from which they must earn a living.

As the ancient colonial government was now at an end and all official intercourse with France cut off, Toussaint promulgated a new constitution, which recognized the equality of the races and as much freedom of trade as possible. A governor was to be named for five years, but on account of the eminent services of Toussaint, he was to occupy the post for

life, with the power to name a successor. This proclamation was made in due form in 1801.

He decreed that slavery should be forever abolished, and at the same time the planters were by law required to give a fifth part of the crops in payment for the labor of the freed slaves, and at the same time the negroes were compelled to labor for their sustenance. To carry this scheme into practical operation was a no less difficult task for him than for the negroes, but the ex-slaves were, with few exceptions, contented and happy.

Though the Spanish colony had been formally ceded to France in 1795, and different posts had in consequence been actually occupied by the Republican troops, yet the city of Santo Domingo, the capital of the eastern part of the island, still remained in the hands of the Spaniards. To obtain possession of the capital and to establish such regulations as might be required on its change of government, Toussaint made a trip through the whole island for this purpose, which was in reality a triumphal march after his great victories in the field. The end of the year 1801 found every part of Santo Domingo in quiet submission to the negro chief and rapidly improving in wealth and happiness under his wise administration. With the aid of the whites, whom Toussaint was anxious to befriend, agriculture was beginning to improve; the finances were getting in order, and the government was being wisely and regularly administered. This prosperity, however, was soon to be interrupted by calamities as serious as any which had ever visited the ill-fated island.

CAPTURE OF TOUSSAINT L'OUVERTURE BY TREACHERY

War having ceased between Great Britain and France in October, 1801, the French navy, which had not for several years been able to leave its ports without fear of capture, was once more free, and Bonaparte determined to recapture Santo Domingo. Although Toussaint had in no way separated the colony from the mother country, Napoleon became suspicious of the black general's ambition and, fearing lest his principal colony should slip away from him, he was induced to listen to the strong appeals of the planters whose estates had been ruined by the negro insurrection, who insisted that they could not be restored unless slavery was again resumed. To counteract the growing tendency of the islanders to free themselves from his control, as well as to offset any possibilities of his everlasting enemy, England, reaping benefit from an alliance with the new country if left to act for itself, Napoleon planned and fitted out the famous expedition of 1802 to bring the colony again under subjection. His brother-in-law, General Leclerc, was given an imposing force of 30,000 men, reinforced, it is said, from time to time up to 55,000. The general embarked and with his naval convoy proceeded to Cape Haitien, where he arrived on the 12th of February of that year. There can be no doubt that the avowed object of the expedition was to restore slavery, although this object was disguised by kindly and friendly letters to Toussaint, such as Napoleon knew so well how to write.

It is not intended to go into the history of this fatal attempt on the part of the French government to reënslave its subjects—a history that is characterized by unspeakable atrocities on the part of the French, who set an example that was speedily followed in retaliation by the negroes. Toussaint, assisted by his two principal chiefs, Christophe and Dessalines, fought with the bravery of desperation; but they were at last overcome, not by battle, but by the artful persuasion and duplicity of his enemy in debauching his own people, who were tired of the struggle. Finally a truce was declared and the tricolor again waved over the whole land.

RETRIBUTION BY THE BLACKS

Probably one of the blackest pages in Napoleon's record is his treachery to Toussaint in cajoling him into disarmament and then having him kidnapped

and carried back to France to die in a dungeon. But retribution speedily followed this perfidity, for the negroes, seeing their beloved chief so basely and cruelly treated, again hoisted the flag of rebellion and, under the leadership of Dessalines and Christophe, assisted by the pestilential yellow fever, they drove the intruders out of the island and into the hands of their implacable enemy, the British, who had again declared war against France. It is said that this expedition to reënslave the blacks cost Napoleon $40,000,000, besides almost all of his troops.

On the first of January, 1804, Dessalines, who followed Toussaint as general-in-chief of the army, promulgated the declaration of Haitien independence, and the country has remained the Black Republic ever since. The name of Haiti, as the island was designated by the aboriginal inhabitants, was now revived and has never been changed. Dessalines, who was soon afterward proclaimed emperor, started a bloodthirsty policy of exterminating the French subjects who still remained in the country, and his acts of cruelty showed how well he had been schooled under the French; but in spite of this many of the planters, who had the alternative of falling into the hands of the English or run the risk of being murdered by the negroes, remained on the island, and as Dessalines' object became later to restore his exhausted male populace, they were gradually allowed to resume tilling the soil.

Dessalines' administration was, fortunately for the Republic, short-lived, but his cruel nature and implacable hatred of the whites led him into such acts of bloodshed as to shame even his own race. At the time of the insurrection in 1791 he was a slave to a negro whose name was Dessalines, and this surname was added to his own, Jean Jacques. He was short in stature and strongly built, of great activity and undaunted courage. He undoubtedly had great military talents in spite of his want of education, but the respect he commanded was due rather more to the terror he inspired than to his ability as a general. He was at last conspired against by his own army, arrested, and killed in an attempt to escape, October 17, 1806

During the insurrection the Revolutionists, who were mainly composed of the negroes, had their headquarters in the north, generally at Cape Francois. While the colored people, many of whom were small property-owners, had established a colony by themselves in the southern part of the island, and having but little in common with the slaves, there was a gradual separation of the two classes, the blacks predominating in the north and the colored people in the south.

Upon Dessalines' death, Christophe, one of Toussaint's generals, took his place, and several years later declared himself king under the title of Henry I, King of Haiti.

Christophe and his wife were crowned as king and queen at Cape Francois, to which place was given the name of Cape Henry. The royal court, copied after the monarchies of Europe, was established here, and a full line of titles was given out, many of them, such as the Count de Lemonade and the Duke de Marmalade, still existing on the island. Christophe, during all his reign of 12 years, put forth his utmost energies to develop the natural prosperity of the island. He introduced the Protestant religion and the English language into the schools, but at the same time he never ceased to prepare to defend his country against the French, which he rightly feared would again attempt to reënslave it.

On a lofty mountain top above the beautiful valley of Millot, back of Cape Haitien, he built that remarkable structure known as Sans Souci. He lived in this palace with his suite in a state of regal splendor. The ruins of the palace, now overgrown by tropical plants, are a monument to Christophe's engineering skill; but more wonderful still is the stupendous castle fortress, built as a refuge in case the French should again appear. Within the walls of this fortress, which

are one hundred feet high and twenty feet thick, many of the three hundred guns which were mounted on its parapets remain to show the skill and endurance which enabled them to be brought up the steep mountain sides.

THE EASTERN END OF THE ISLAND ASKED FOR ANNEXATION TO UNITED STATES

In 1844 the people of the eastern end of the island again separated themselves from Haiti and established the Republic of Santo Domingo, or the Dominican Republic, as it is officially designated, and from that date to the present time the two divisions have been maintained.

Under the directions of a resolution passed in the United States Congress January 12, 1871, a commission was dispatched by President Grant to investigate the conditions in Santo Domingo. This country has always, more or less, been a source of solicitude to us lest some European power should again attempt aggressions against the Monroe Doctrine. The commission was the result of an almost unanimous vote by the inhabitants of the Republic in favor of annexation of their country to the United States. The report of the commission was favorable to its annexation, and being approved by President Grant, it was submitted to the Senate, which, however, took no action upon it. On January 10, 1873, the Bay and Peninsula of Samana were ceded to a company formed in the United States, and through the means this company afforded us it was thought a coaling station might be established here for the use of the navy, but it is probably fortunate for us, at least, that this was not done, and as the contract with the company was withdrawn in March, 1874, the matter was eliminated from our diplomacy.

As will always be the case, the officers of the United States Navy have been interested spectators in the progress of this island. The navy is now engaged in an extensive hydrographic survey along its coasts, which is much needed, not only for ourselves, but for the commerce of the world in general.

Many naval officers who have been sent to guard American interests on the island have frequently been called upon to handle matters of international policy, and the responsibility resting upon them at such times is rarely conveyed by the brief accounts given of such transactions in the daily press. Almost always during the many local disturbances which occur here an American war vessel is present, and sometimes her captain is called upon to settle, upon the spur of the moment, questions that might affect the very peace of the nation, and the officer must stand or fall as his course meets with approval or disapproval by his superiors. A long list of such cases might be made, but I will briefly refer to only one.

PRESENT CONDITIONS IN SANTO DOMINGO

As stated by the President in his annual message to Congress for the year 1905, "The conditions in Santo Domingo have, for a number of years, grown from bad to worse, until a year ago all society was on the verge of dissolution. Fortunately just at this time a ruler sprang up in Santo Domingo who, with his colleagues, saw the dangers threatening the country and appealed to the friendship of the great and powerful neighbor who possessed the power and, as they hoped, also the will to help them. Accordingly the executive department of our government negotiated a treaty under which we are to try to help the Dominican people to straighten out their finances."

For this purpose Commander A. C. Dillingham, owing to his exceptional knowledge of the conditions in the Dominican Republic, due to an extended tour of duty in that country, was appointed by the President a special commissioner and sent to the capital city January 5, 1905, to prepare, in connection with the minister resident Mr T. C. Damson, a memorandum of the treaty.

The treaty is still held in abeyance by the Senate, but the principal features are being carried out by American citizens appointed by the Dominican Government with *greater marked success*

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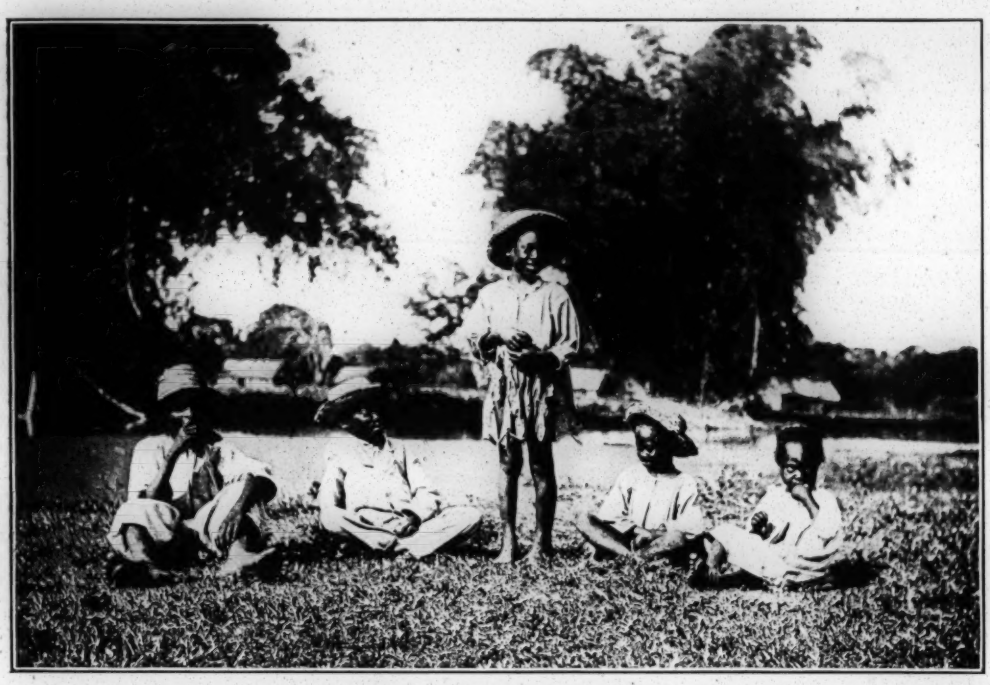


BOYS OF SANTO DOMINGO

than was really hoped for. The collection of *practically* the *only* revenue of the Republic which comes from a tax on its exports and imports is thus separated from political manipulation and peculation and the receipts are divided into two parts, 45 per cent of which is allotted for the expenses of the government, while the remainder goes into a sinking fund to cancel the obligations for all claimants who hold its certificates of indebtedness. The result thus far is to give into the public treasury from the smaller portion of its income a greater amount of money than has ever been received heretofore from the whole revenue of the Republic. We may well consider if this part of our duty as an elder brother, which we owe to our small sister republics on the American continent, is not of more benefit to ourselves, to say nothing of our moral obligations, than would be a resort to physical force, which we might be led to use in order to protect the principles of the Monroe Doctrine, which is the basis of our political power.

THE REMAINS OF COLUMBUS SAID TO BE AT SANTO DOMINGO

One achievement of which the Dominican people are very proud is that of still retaining within their borders all that remains of the illustrious discoverer of America.

These remains were sent from Valladolid, Spain, after the death of Columbus, to the land he discovered, and deposited in the cathedral at Santo Domingo City. When the island passed under French control, in 1795, a frigate was sent from Havana to remove to that city the body of the great Captain. The officials, finding a vault under the pavement of the Cathedral, thought a person of no less rank than Columbus could be buried within, but they failed to make such an examination as would insure

this fact. In great state the leaden case containing the body there found was transported to Havana and deposited in a niche, made for that purpose, in the cathedral of the capital city of the Spanish West Indies. In 1877, while repairs were being made to the cathedral in Santo Domingo City, another vault was discovered, containing another leaden casket, in which there were not only fragments of bones but a silver plate on which was the name "Don Cristobal Colon, discoverer of America." This and other proofs found showed conclusively, to every Dominican at least, that their worshiped hero was safe in the land he loved. One can imagine the rejoicing that the discovery of these precious relics brought to the inhabitants. It is certain that they were in marked contrast with the reception accorded the distinguished Admiral in Spain, when he returned in chains from his last voyage to the New World. Of course, the Spanish people would never admit that when they hauled down their flag on the American continent, for the last time, on January 1, 1899, they did not take with them all that remained of the man who had done so much for them and the world at large.

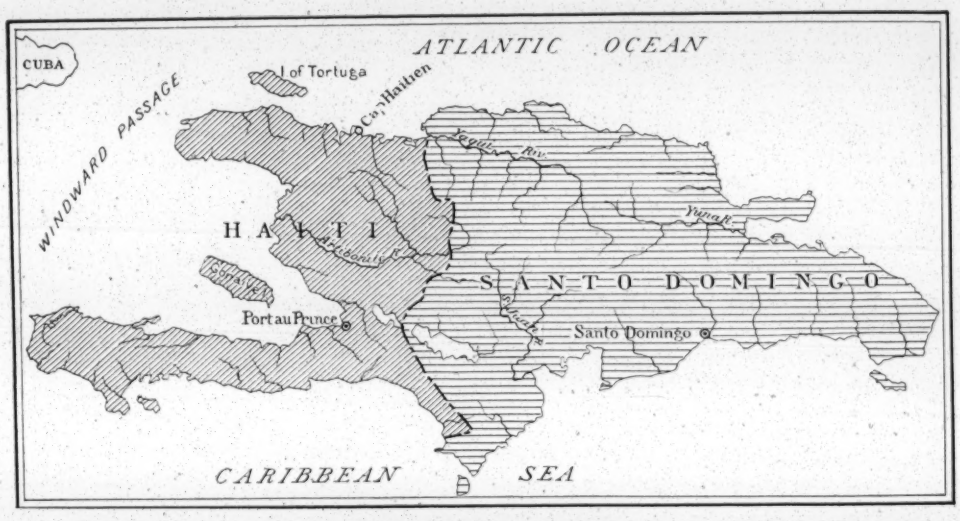
HAITI IS DEGENERATING TO A CONDITION OF BARBARISM

It is not possible within the limits of this paper to go into details regarding the turbulent history of Haiti. The fact that of its 21 rulers, from Dessalines to the one now holding power, four only have completed their terms of office, the most of them being driven out of the country, will show the general tendency of the people to revolution. History is here constantly repeating itself, summed up in the general statement that the "outs" are always struggling to get into power, while the "ins" are striving to retain possession of the spoils of office.

It is said that Haiti is getting blacker and blacker, the white element having been practically exterminated or removed from the island. It is not that the whites are unkindly treated here, but so many difficulties surround their holding of property that development is impossible, and the white people are reluctant to invest money in a country where there is such little promise of an income from it. It is the one country in the world where white blood is at a discount. There is, however, quite as much antagonism existing between the mulattoes and the blacks as is usually found between the blacks and whites in our own country, so the colored question is not eliminated from politics even here, and parties are generally lined up according to color, and as a rule the blacks and mulattoes alternate in the control of the executive offices.

In all its political history, Haiti, the beautiful, has been torn almost to shreds by its turbulent inhabitants, led on by a few inspiring chiefs, who rarely have had any other object in view than personal gain. The inhabitants themselves are naturally as gentle, except when overcome by the barbarous religious customs handed down from their African ancestors, as were the aborigines that Columbus found here. A traveler may pass from one end of the island to the other without being molested, unless his visit happens to be coincident with one of its many revolutions, when, owing to the poor shooting of the soldiers he runs more risk of his life than do the participants themselves. The Haitians do not consider it a crime to rob the government, and hence stealing from it is general. They rather regard it as a duty for the government to provide sustenance for the people, and if it does not do so, they use their prerogative to enforce their claim.

As practically 90 per cent of the population are descendants from the former slaves, who have no higher ambition than to possess sufficient means to supply the demands of their appetites, their wants are easily satisfied. The scant clothing required in the Torrid Zone is obtained without much difficulty, and as enlistment in the army is sure to gain both of these necessities, the natives naturally



SKETCH MAP OF HAITI

seek the life of a soldier, and as such they quickly transfer their allegiance to the highest bidder or, in fact, to any one offering a change. Owing to the general lack of enterprise among the lower classes of the people and the greed of the few who from time to time control the administration of the revenues, the only hope of the country is to have some strong man, such as Diaz of Mexico, revolutionize the methods of the government.

VOODOOISM STILL PRACTICED

No accurate history of Haiti can be written without a reference to the horrible sorcery, called the religion of Voodoo, which was introduced into the country with the slaves from Africa. Its creed is that the God Voodoo has the power usually ascribed to the Christian's Lord, and that he shows himself to his good friends, the negroes, under the form of a non-venomous snake, and transmits his power through a chief priest or priestess. These are called either king and queen, master or mistress, or generally as papa-lois and mama-lois. The principal act of worship consists of a wild dance, attended by grotesque gesticulations, which leads up to the most disgraceful orgies.

A secret oath binds all the voodoos, on the taking of which, the lips of the neophyte are usually touched with warm goat's blood, which is intended to inspire terror. He promises to submit to death should he ever reveal the secrets of the fraternity, and to put to death any traitor to the sect. It is affirmed, and no doubt is true, that on special occasions a sacrifice is made of a living child, or the "goat without horns," as it is called, and then cannibalism in its worst form is indulged in. Under the circumstances of taking the oath of allegiance, it should cause no surprise that the Haitiens claim that this is not true and defy any white man to produce evidence of guilt. But, notwithstanding, no one can read the horrible tales published by Sir Spencer Saint John, one of the British ministers to Haiti, which describes in detail the revolting practices of the voodoos, together with the proofs he brings to substantiate the truth of the allegations, without coming to the reluctant conclusion that cannibalism is resorted to in these meetings. Of course, no white man could long live on the island after having given testimony leading to the conviction of culprits in such cases, and therefore the negroes'

demand for proof can never be satisfied. Indeed, it is said that even some presidents who have openly discouraged the voodoo practices have come to violent deaths from this cause.

TESTIMONY OF AN EYE WITNESS

The character of the meetings of the voodoos, which take place in secluded spots in the thick woods, are well known, and I have been given a description of one of them from an eyewitness, who is an officer of our navy, which no one could hear without a shudder. He states in brief that one day while out hunting he abruptly ran into a camp of worshipers, which was located in a lonely spot in the woods, and the horrors he there saw made an indelible impression upon his mind.

When his presence was discovered he was immediately seized by a frenzied crowd of men and women, and for some minutes there did not seem to be a question but that his life was to be forfeited; but the papa-lois called a halt and a council, apparently, to determine what action should be taken, and while this was in session a handful of coin, judicously scattered, diverted the thoughts of the negroes for the time being from their captive. The usual sacrifice of a live white rooster was now brought on, seeing which the people were called back to their worship, and the ceremonies went on in his presence.

In the horrible struggle which took place for possession, the bird was torn literally to pieces, and he had no doubt that its accompaniment, the "goat without horns," would soon follow. While this was in progress his presence seemed to be forgotten, and, watching a good opportunity, he ran for his very life, not stopping until he reached the protection of his ship.

This officer has to his credit one of the most gallant deeds enacted during the Civil War, for which he received promotion by act of Congress, but his comrades on board his ship said they never saw a man more frightened than he was when he returned to them, and he himself says the memory of the event produces a horrible nightmare which he will never be able to overcome.

There is no doubt these voodoo practices keep the negro in touch with that "call of the wild" which perhaps even the white man, if restricted in civilizing influences and treated as they have been, might be led to follow; but it is to be hoped that education, which the best of the Haitiens are now acquiring for their own families and are striving to make universal in the land, will in a few years stamp out this horrible practice, with all its evils. It is well for us to consider whether we too may not expect some such acts of savagery to break out in our country if our own colored people are not educated for better things.

PEST HOLES OF THE WEST INDIES

Of the eleven ports of Haiti open to foreign commerce, Cape Haitien and Port-au-Prince are the largest and most progressive.

Cape Haitien, or "The Cape," as it is commonly called, is situated on the northwestern coast, at the foot of a hill that slopes back to the sea, with most picturesque surroundings. It has a commodious harbor and supports a population of 30,000 or 40,000 people. Under the French, it was the capital of the colony, and its wealth, splendor, and luxury gained for it the name of Little Paris; but now the structures erected by the French in colonial days are a mass of ruins, the parks overgrown with tropical weeds, the fountains chocked with debris, the gutters filled with filth, all producing pestilential emanations from which foreigners speedily run away, if they are forced into its environments.

Port-au-Prince, the present capital of the Republic, as well as its largest and most important city, is likewise most picturesquely located at the foot of hills, where one may escape from its blistering and filthy streets to mountain resorts that

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would be popular if located in almost any country of the world. Unlike Cape Haitien, the city is cut off from the trade winds, to which this island owes so much for its salubriousness, and therefore it is hot; but still the traveler caught in the town may frequently felicitate himself when he reads that cities in our own country have higher temperatures by 10 to 15 degrees than is usually found here. The city is well supplied with the most delicious mountain water, and if its 60,000 inhabitants used it as freely as do Americans, it might be as clean as nature made it. As it is, it may well hold the palm for being the most filthy, foul smelling, and consequently fever-stricken city in the world. The gutters of the streets, which may be said to cover the whole road-beds, are filled with stagnant waters and are used as cesspools by the people. But for the torrential rains, which pour down the mountain sides and carry off all the filth into the beautiful bay, even a Haitien could not live there. But the bay, thus polluted, is quite as much of a menace to health as the city itself. During the visits of American men-of-war to the port, most of the time is spent in keeping the people from the pestilential vapors which emanate from the sea itself. The water of the harbor is so bad that it cannot be used even for scrubbing the decks of the ships.

I recall a painful incident which occurred here during one of my visits many years ago. A French man-of-war was anchored in the Port when our own cruiser entered it, and so rapidly were her people dying from the dreaded yellow fever that her flag remained at half-mast practically all during our stay there. A few weeks later we saw this same vessel in Hampton Roads, Virginia, and learned that all but five of her crew had died from the effects of the fever, after which they got some of the natives to sail the ship to our own ports; but even the natives were so reduced in number that it was necessary for the flag-ship of the French North American squadron to tow her consort to Halifax in an effort to freeze out the dreadful disease.

It is thus that the people have themselves made this island of "Little Spain" a veritable pest-hole.

But we should not forget, however, that they are our neighbors, and that we owe it to ourselves as a Christian nation to help them over the many pitfalls of popular government, which we by example led them to establish before they had gone through the preparation necessary for the proper use of universal suffrage, and which even our forefathers were not too well prepared to take up, after hundreds of years of enlightenment and study of political science and economy and republican principles.

Let us, moreover, not make a similar mistake to the one here enacted, lest our own wards go through the horrors which have so darkened the history of the Black and Brown republics.

THE MADURA TEMPLES

By J. S. Chandler, Auburndale, Massachusetts

THE last Hindu dynasty that reigned in South India was the Nayaka line of rulers; and the greatest of the Nayakars was Tirumala, who reigned from 1623 to 1659. Although frequently engaged in wars and expeditions, he found time to erect a vast palace, construct an immense tank or reservoir, and add great buildings to the temple of Siva that was the center of the city.

The temple had its shrines for the god and goddess and was especially extended on the god's side by a porch of a thousand pillars, built by one of Tirumala's ancestors.

The worship of the temple combined that of the two gods, Siva and Vishnu, symbolized in the marriage of Vishnu's sister to Siva. The goddess then was a representative of Vishnu. Now the Nayaka rulers were worshippers of Vishnu, so when Tirumala enlarged the temple he strengthened the Vishnu element by enlarging the goddess' side of the temple and making it equal to the god's portion.

Among other buildings, he constructed the "golden lily tank" and surrounded it by pillared colonnades. The walls are covered with paintings of local legends, including the 64 miracles that Siva is said to have worked in the region of Madura. These miracles are represented as sports, all the god's acts being play to him.

Between the tank and the shrine of the goddess stands the Porch of the Parrots, so called from the screeching caged parrots always kept in it. The pillars of this porch are monolithic statues, of which five represent the five Pandava heroes of the Hindu epic, the Mahabharata. These heroes are connected with Vishnu worship, another indication of Tirumala's connection with it.

The great wall surrounding the temple incloses nearly 14 acres. Outside the wall and opposite to the great pagoda of the god's portion, he constructed the choultry, or porch, that bears his name. It is 333 feet long and 105 feet wide, roofed with long slabs of granite, which are supported by four parallel rows of 124 sculptured stone pillars 20 feet high.

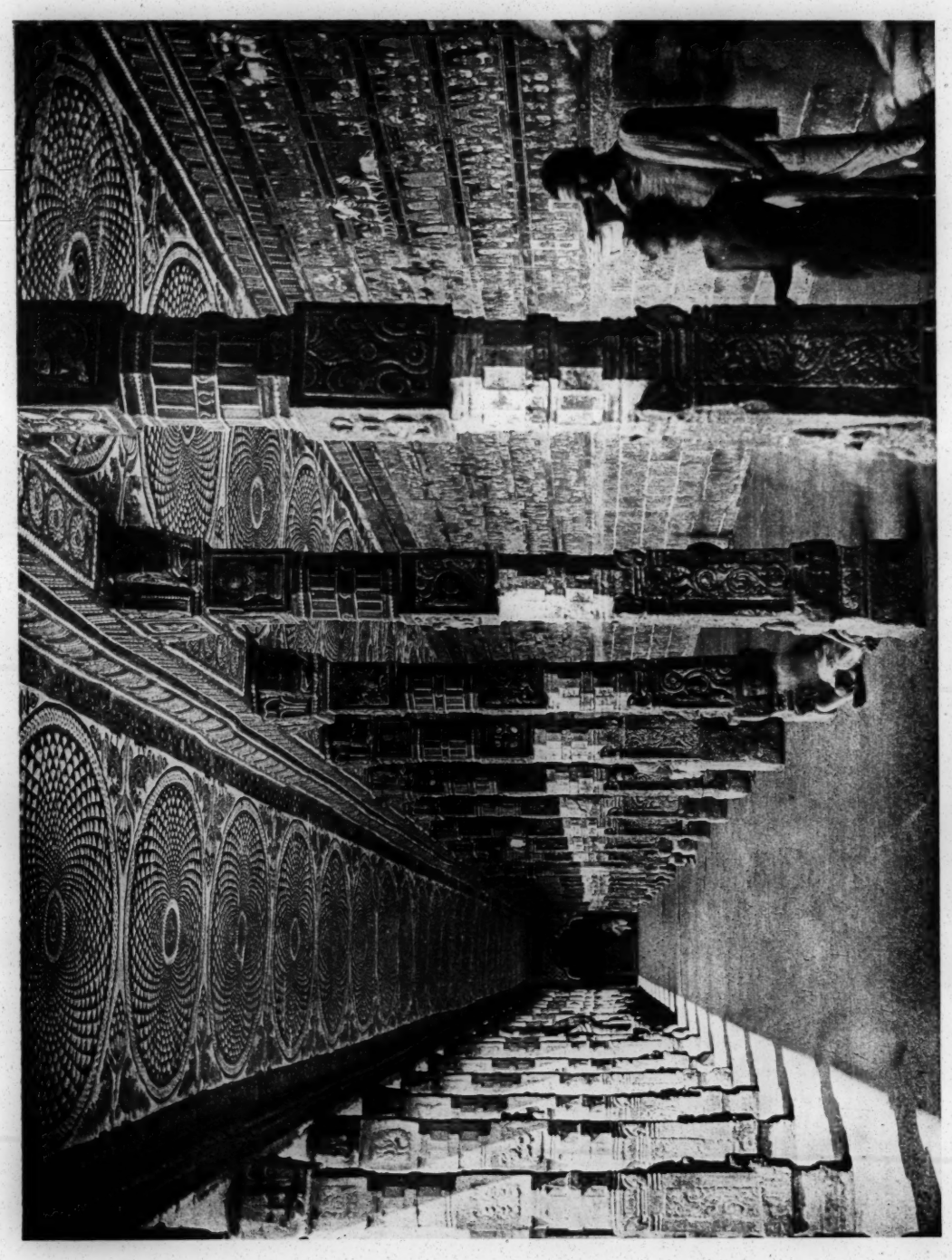
He also commenced, but left unfinished, a royal pagoda that was intended to be the finest tower in southern India. The door posts of the gateway through the completed story are formed of monoliths over 50 feet high and 3 feet wide, carved with exquisite scrolls of foliage.

His second structure was the raft tank, or Teppakulam, a reservoir measuring 1,000 feet on the north and south and 950 on the east and west, faced all round the sides with cut granite and surmounted by a handsome parapet and inside walk of the same material. In the middle of the reservoir is a square island, also faced with cut granite, on which, among green palms and flowering trees and jessamine gardens, is a small white temple with a pagoda tower, flanked at the four corners of the island with graceful miniature pagodas.

Every January the birthday of Tirumala is celebrated by a feast of lights, in which the whole tank is illuminated by thousands of little lamps on the inside of the parapet, while the images of the god and goddess are floated around the island on rafts built up like pagodas.

The third great work of Tirumala was the vast palace, an arched and domed structure with Saracenic features, in strong contrast to the rectangular forms of the temple buildings.

One courtyard indicates the magnificence of the whole. It is 252 feet long and 151 feet wide, round which runs a roofed arcade of great beauty supported on tall stone pillars 40 feet in height, connected by foliated brick arches. Round three sides of this court, at the back of the arcade, runs a very handsome line of lofty cloisters 43 feet wide and



COLONNADE OF GOLDEN LILY TANK, WITH PAINTINGS OF SIVA'S SPORTS Photo from J. S. Chandler

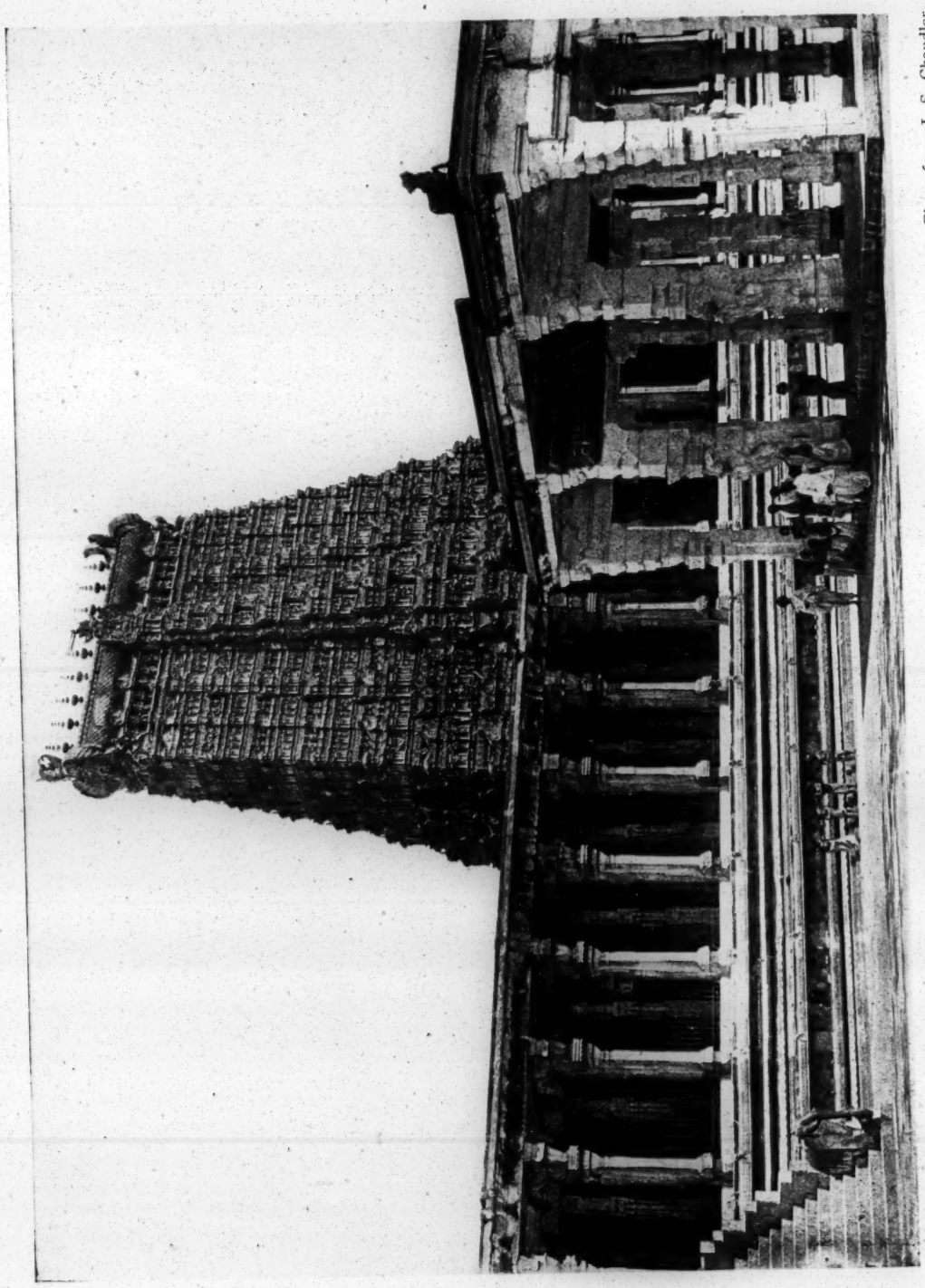
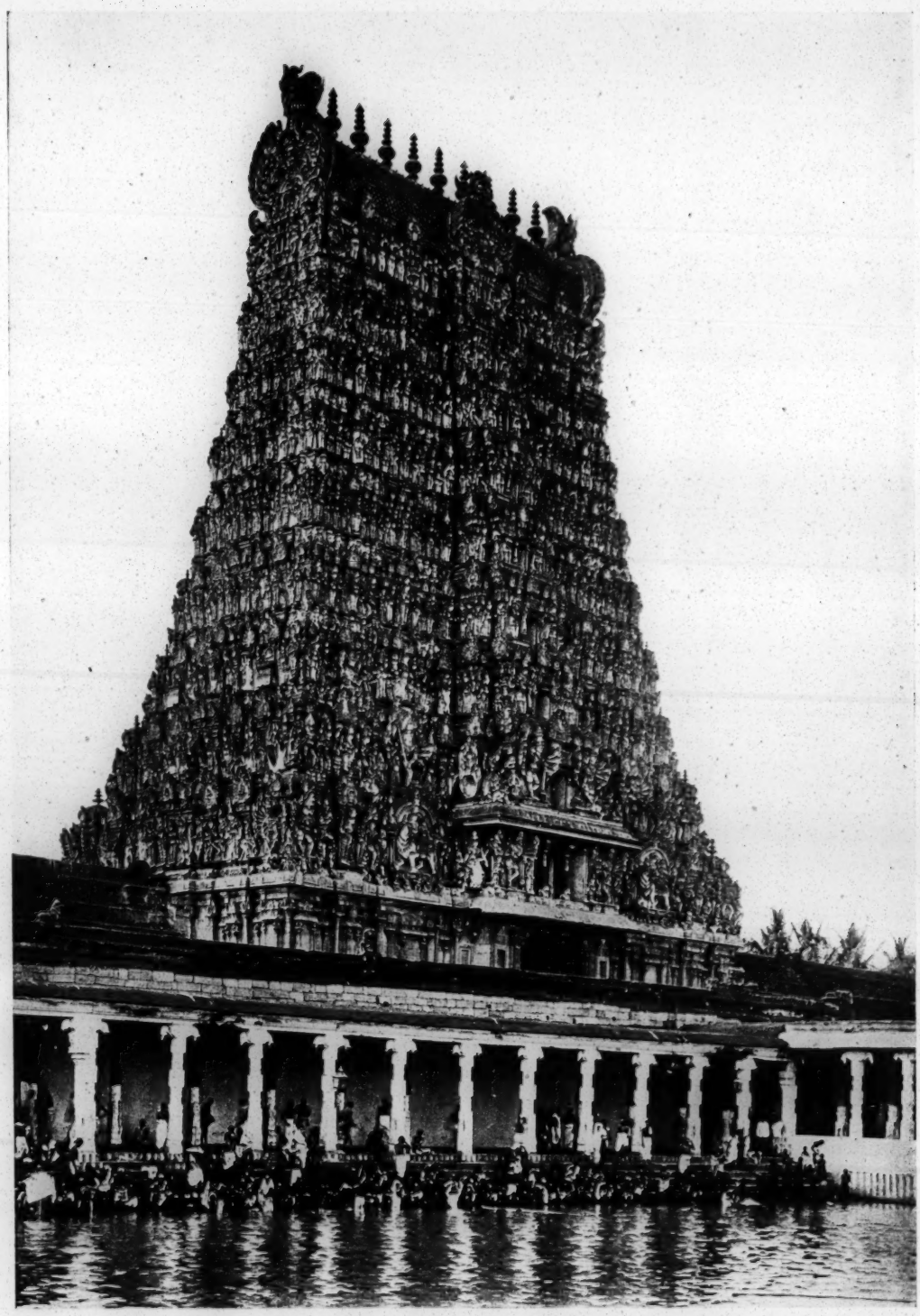


Photo from J. S. Chandler

PORCH OF A THOUSAND PILLARS, MADURA



GOLDEN LILY TANK, MADURA Photo from J. S. Chandler

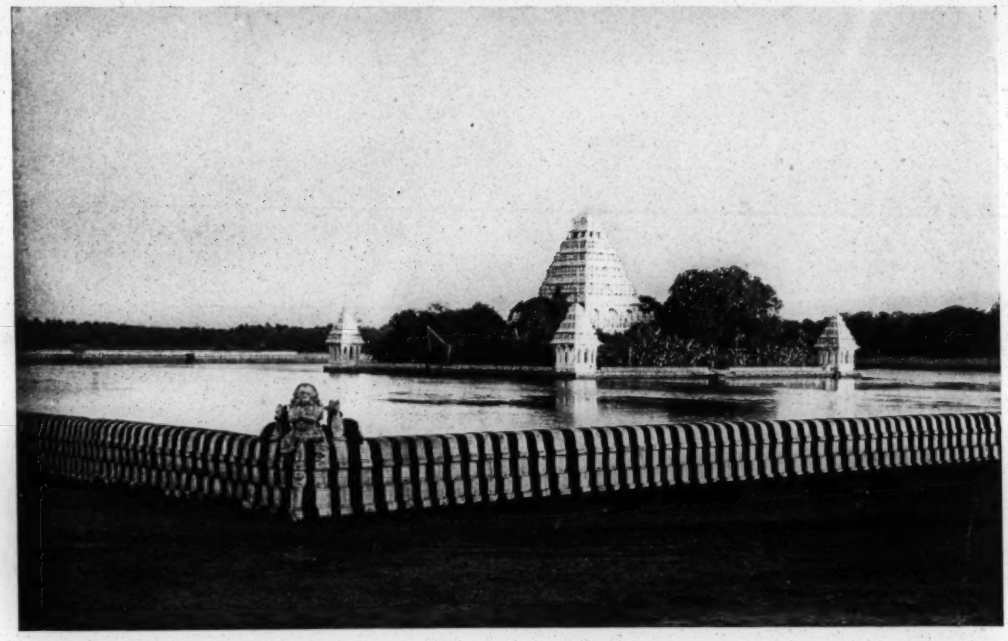


Photo from J. S. Chandler

TEPPAKULAM OR RAFT TANK, MADURA

upheld by three parallel rows of pillars supporting arches some 26 feet high. On the fourth side of the court the cloister is much deeper and finer, being altogether 105 feet wide, supported on five rows of huge pillars and roofed with three great domes. The central and largest dome measures 60 feet in diameter and is 73 feet above the ground, and has in front of it a superb portico, the pillars of which are 55 feet to the spring of the arches.

Originally this domed cloister constituted the public reception hall, and in its center stood a square building of black granite inclosing a chamber made of ivory. Within this chamber, again, there was a jeweled throne, on which the king was accustomed to take his seat at the great nine-nights festival, surrounded by all his banners or ensigns of royalty, and before which all kings were accustomed to do homage.

With this cloister as a specimen, we can accept the judgment of Father Proenza, a Jesuit who wrote from Madura in 1659, that the colossal proportions and astonishing boldness of the royal palace in Madura recalled the ancient monuments of Thebes.

THE BEAR HUNT

REPLYING to the numerous inquiries from readers as to the health of Dr Penrose, whose adventure with a grizzly was described in the NATIONAL GEOGRAPHIC MAGAZINE for February, we have much pleasure in saying that Dr Penrose has now entirely recovered his former strength and vigor and has already made plans for considerable hunting when the season opens.

In a letter to this Magazine Dr Penrose says that one of the most interesting features of his experience was the absence of pain "when being chewed by a bear. I have read that Livingstone had the same experience when chewed by a lion. Men rarely suffer pain with sudden traumatism. What pain I had came on some hours after the injury."

AMONG HONEST PEOPLE

Straw sandals (waraji) for sale by the roadside near Arita, province of Hizen, Japan. Country people weave these straw shoes in their leisure hours, and hang them from stakes by the roadside for sale. The traveler helps himself to a new pair of shoes, and drops the coppers in the bamboo cup. An old straw hat protects the shoemaker's stock from rain. The custom, formerly quite common in old Japan, is dying out, now that the new treaties have gone into effect, and foreigners are free to travel everywhere without passports. Photographed by Eliza R. Scidcore. Copyrighted by Harper Bros.

THE NATIVE OYSTERS OF THE WEST COAST

By Robert E. C. Stearns

Honorary Associate in Zoölogy, U. S. National Museum

IN reading Dr Smith's interesting article, "Our Fish Immigrants," in a recent number of this Magazine, his comments on the native oysters of the west coast attracted my attention. When we consider the fact that our "natives" are absolutely unpretentious, it would seem as if criticism should be tempered with mercy.

Several species and varieties of oysters* inhabit the long stretch of shore between Vancouver Island and San Diego, and doubtless these are found for a considerable distance north and south of the points indicated, as well as in the various bays and inlets connected directly or indirectly with the sea, especially that great body of inland water, Puget Sound. They also occur on the rocky margins of the islands in the Santa Barbara Channel and elsewhere on the islands and islets farther north. In bygone days they furnished food for the Indians, to a limited extent, as they do now to the palefaces. The abundance of abalones and "clams" of many species afforded an ampler supply to the "red men," as is proven by the remains of clam bakes in the mounds and shell-heaps (Kitchenmiddens) here and there, silent testimony of many old-time festivals.

The principal or best-known native oyster is *O. lurida*, which is the only species of commercial importance. It is always purchasable in the San Francisco markets and has been to my knowledge for nearly or quite fifty years. At the present time it is quotable on the retail stalls at 40 to 50 cents a *hundred*, the transplanted Atlantic *O. virginica* selling at 30 to 40 cents a *dozen*.

* *Ostrea lurida*, and varieties *expansa* and *laticaudata*; *O. concaphila*, also *O. amara*; the latter, however, belongs to a more southerly fauna.

The common "natives" of the British Isles and the general seaboard of northern Europe, *O. edulis*, according to common report, have the same "coppery flavor" as *O. lurida*; as they usually occur, they are about the same size. In the matter of flavor, it should be borne in mind that oysters of the same species vary considerably according to the locality or station where they occur. In the still, shallow waters of lagoons they are usually much saltier than in the proximate deeper water along the shores, that are more thoroughly washed by the daily tides. This was observed by me when on the Gulf coast of Florida in 1869. Presumably the above, and other factors not so easily perceived, affect the flavor one way or another.

The writing of this paper revives the memory of a plate of "natives" eaten at Astoria, in July, 1882, on the invitation of the late Justice Stephen J. Field, of the Supreme Court of the United States. By a happy coincidence we were fellow-travelers on the steamer from Portland, Oregon, to San Francisco. We had known each other for twenty years. Our oyster feast was therefore akin to a love feast, for the Justice was a genial companion. He pronounced the oysters *good*, and they *were* good; the best "natives" I had ever tasted. Locality, as before remarked, is to be considered when we discuss flavors.

This applies with equal or greater force to clams. *Mya arenaria*, the common long-necked clam, or "mananose," occurs in clean sandy stations; also in beds that are more or less muddy, in which case the flavor is impaired and the meats, as an epicure would say, have an "off taste."

Our native *O. lurida* is small; when "shucked," about the size of a half-dol-

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lar piece; those from cultivated beds somewhat larger.

Although California (San Francisco County) is credited in the report of the United States Fish Commissioner for 1904 with producing 300,000 pounds, of the value of $92,000, the principal supply of that city is derived from certain localities in Washington, which state, according to the same report, exhibits a yield of 1,069,461 pounds (equal to 152,780 bushels), valued at $279,312, while the Oregon statistics show only 6,944 pounds, worth $1,488. It will be seen that the value of "natives" for the year, in the three states, makes a total of $372,800—no insignificant sum—being more than half the value of the annual output of the Atlantic or transplanted oyster.

The oyster-beds of Washington are subject to occasional severe climatic contingencies.

The Puget Sound oyster-beds are at Samish Bay, in Skagget County; Oyster Bay, in Mason County, and Mud Bay, Big Skookum, and North Bay, in Thurston County; on the ocean coast of Washington, Shoalwater or Willapa Bay and Toke Point cove. The Oregon region is pretty much restricted to Yaquina Bay, in Lincoln County.

On the night of January 13, 1907, the concurrence of an unusually low tide and a cold snap, the temperature having fallen to 18 degrees below the freezing-mark, was disastrous to the oysters and oyster-beds, both native and eastern plants, in many localities in different parts of Puget Sound. The loss was estimated at "several hundred thousand dollars," as "new beds will have to be planted, and it will be five years before the so-called 'Olympia oyster' will again be on the market."

All along our western coasts the tides range very large in January, running above average height and below average low water. Here (San Francisco) they ranged from 7 to 8 feet in January. At Olympia they must range nearly three times that (17.2 feet). In June there is a good range, but not equal to January. Of course there are certain conditions that decrease or increase the range. Strong southerly winds would run the low tide much below the average. A strong southerly gale on the coast at San Francisco has run the high water to 9.93 feet, or more than three feet above the average, as stated by Prof. George Davidson.

The low June tides mentioned by Professor Davidson, offer exceptional opportunities to the observer and collector of marine life along the shore. So large an area of the sea bed is uncovered that many forms not to be had between ordinary tides are then obtainable.

Then, too, the famous geoduck,* known to science as *Panopea generosa,* the "Giant clam of Puget Sound," is accessible. It sometimes reaches the weight of *sixteen pounds.* From an epicurian point of view, it holds the same relation to other edible mollusks that woodcock and Chesapeake Bay "canvas-backs" do to other birds, and "stewed terrapin" to other dainties. The late Professor Baird would have given a thousand or two dollars to have successfully planted this bivalve on the Atlantic side of the continent.

South of the boundary line of the United States and Mexico, on the outer shores of the peninsula of Lower California, as well as in the Gulf of California, 600 to 700 miles long, the two shores making a reach of 1,200 to 1,400 miles, we have a region which we may safely assume includes many localities exceptionally well adapted for oyster culture. The general mollusk-fauna of the Gulf is particularly rich in number of species and abundance of individuals.

This fauna includes several species of oysters, of which two more are of good, merchantable size and worthy of mention, as sooner or later they will find a place in trade quotations. One of these

* Pronounced *gwo'-duck;* also known as *Glycimeris generosa.* See my paper on above, with numerous figures, in Bulletin of the U. S. Fish Commission, vol. III, No. 23, October 19, 1883, and Annual Report of the American Fisheries Society, April meeting, 1885; also *Forest and Stream,* May 28, 1885.

closely resembles the Atlantic *O. virginica,* and was so referred to as long ago as 1863 by Dr. P. P. Carpenter in his list of west coast shells,* and *O. iridescens,* of somewhat darker semi-nacre. There are many examples of these in the National Museum. The first of the above was collected in 1850, or about that time, at La Paz, by Major Rich, of the U. S. Army, and is further credited to Margarita Bay, on the outer shore of the peninsula (Xantus Collection, 1860).

As many as forty years ago the importation of these Gulf oysters was attempted by San Francisco parties. The enterprise failed for some reason—presumably, uncertainty of transportation and other requisite facilities. With quick service by railroad, which is certain to come before many years, and the necessary ice plant or refrigerator cars, *Ostrea-culture* in the Gulf of California will sooner or later be a profitable industry, as the general region is immune from some of the perils that are so discouraging to enterprises of this kind in more northerly latitudes, for *natural increase* could be safely counted upon.

For a self-perpetuating stock for the northern waters, as long ago as 1886, at the request of Professor Baird, I answered a letter addressed to him by parties in San Francisco, and recommended experimenting with some edible species from Japan, as being more likely to propagate than any species from a more southerly source, temperature of waters considered. This very desirable experiment remains to be tried.

In writing of the Geologic age of the region about Berkeley, the late Prof. Joseph Le Conte† said: "*Oysters,* such as would astonish a latter-day California, existed in such numbers that they formed great oyster-banks. Their agglomerated shells, each shell five or six inches long and three to four inches wide form masses three feet thick and extending for miles. These are found in the Berkeley Hills; but elsewhere in California. Miocene and Pliocene oysters are found thirteen inches long eight inches wide and six inches thick. Alas for the degeneracy of their descendants, the modern California oyster. And yet, upon second thought, there may be nothing to regret. It may be that in the gradual decrease in *size* the *flavor* has been correspondingly intensified. It may be that what was then diffused through a great mass of flesh, and therefore greatly diluted, was all conserved and concentrated into the exquisite piquancy characteristic of the little California oyster of the present day. If so we are consoled."

* Report to the British Association, 1863 (pp. 542 and 621), Smithsonian Miscellaneous Collections, No. 252. Washington, December, 1872.

† "A Berkeley Year," &c. Published in Berkeley, California, in 1898.

TOPOGRAPHIC MAPS ISSUED BY THE GEOLOGICAL SURVEY IN 1907.

The new topographic maps published by the United States Geological Survey in 1907 comprise 104 sheets and cover areas in 32 states and 2 territories, as shown by the following lists. (Address Director U. S. Geological Survey, Washington, D. C.)

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Do.	San Cristobal
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Illinois	Belleville
Do.	Eldorado
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Do. .....Tupper Lake
Do. ..... Winfield
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Do. ..... Geneva–Racine
Wyoming ..... Kirwin
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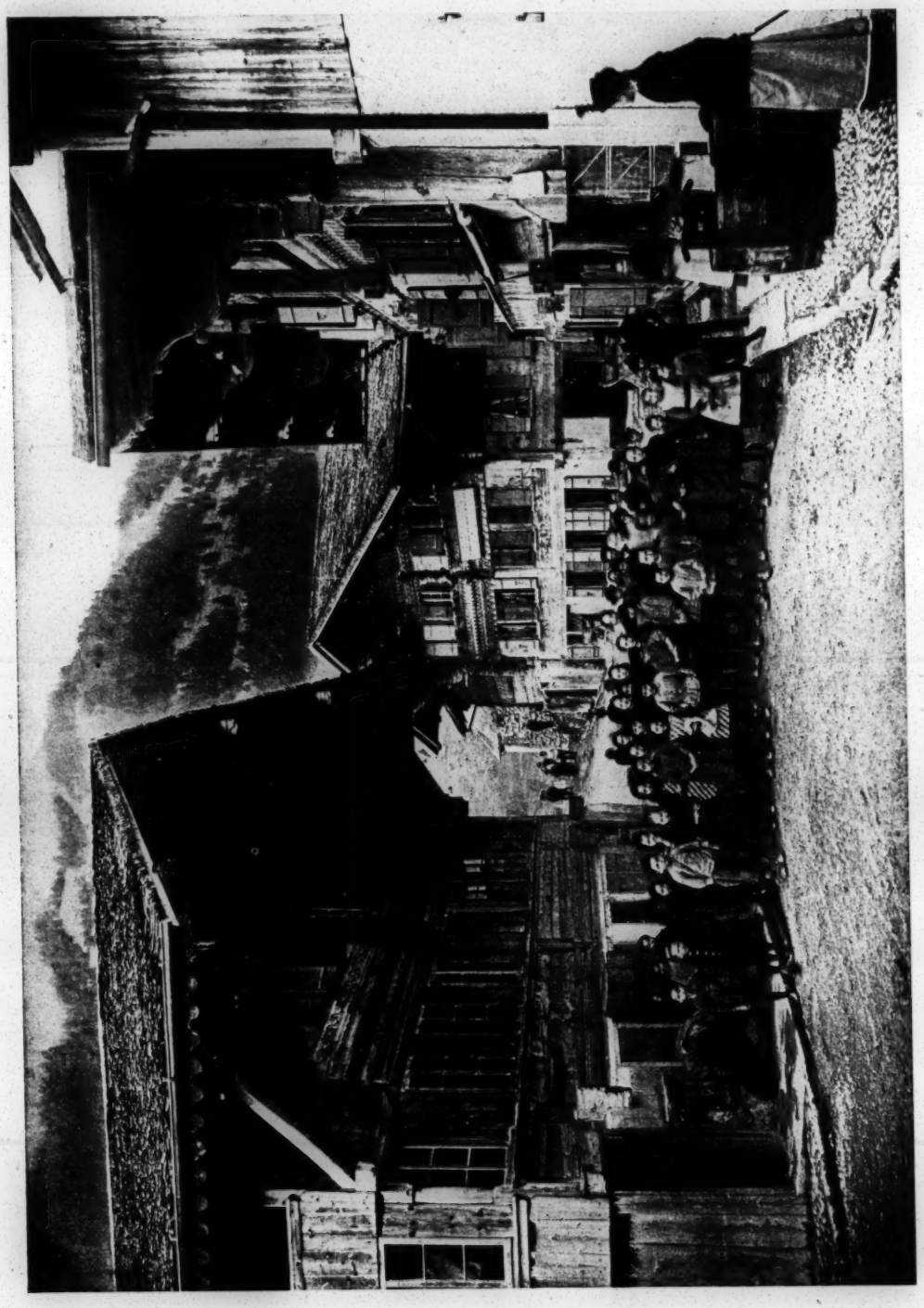
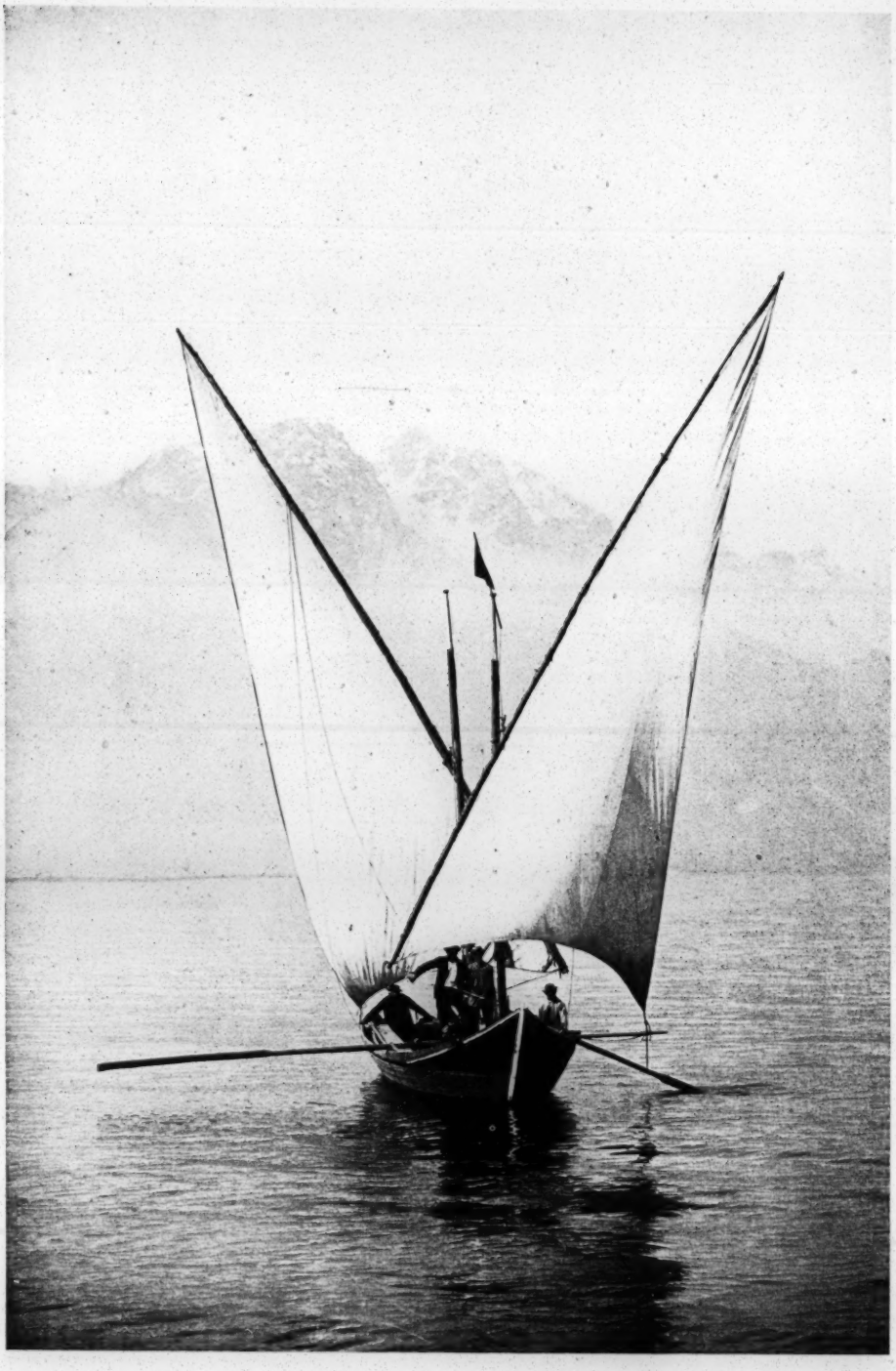
Four of the maps listed above—the Cœur d'Alene Special (Idaho–Mont.), the Geneva–Racine (Wis.), the Vishnu (Ariz.), and the Yosemite Valley (Cal.)—are much larger than the regular atlas sheets of the Survey and are sold at 10 cents each. The other sheets are of standard size—16½ by 20 inches—and are sold at 5 cents each in lots of less than 100; the wholesale rate for the standard sheets is $3 a hundred.

Much of the work represented by these maps was done by coöperation between state surveys and the National Survey. California, Ohio, New York, Pennsylvania, and West Virginia make generous appropriations for work of this kind. Other states coöperating are Illinois, Kentucky, Maine, Maryland, Michigan, North Carolina, and Oklahoma. In addition to those listed, maps of Sacramento Valley, Cal., from A to N, on a scale of 1:24000, sold at 40 cents each, were published in coöperation with the state. These are photolithographs prepared from the same base from which the regular sheets are made.



SCHOOL CHILDREN IN A SWISS TOWN

Photo from Mrs Gardiner Greene Hubbard



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CROSSING A SWISS LAKE

Photo by H. D. Stolesburg, Royal Geographical Journal, London

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Friday, February 28—"Holland's War with the Sea," by Prof. James Howard Gore, George Washington University. The romantic and picturesque in Holland's national life will be described by Professor Gore, and illustrated with lantern slides.

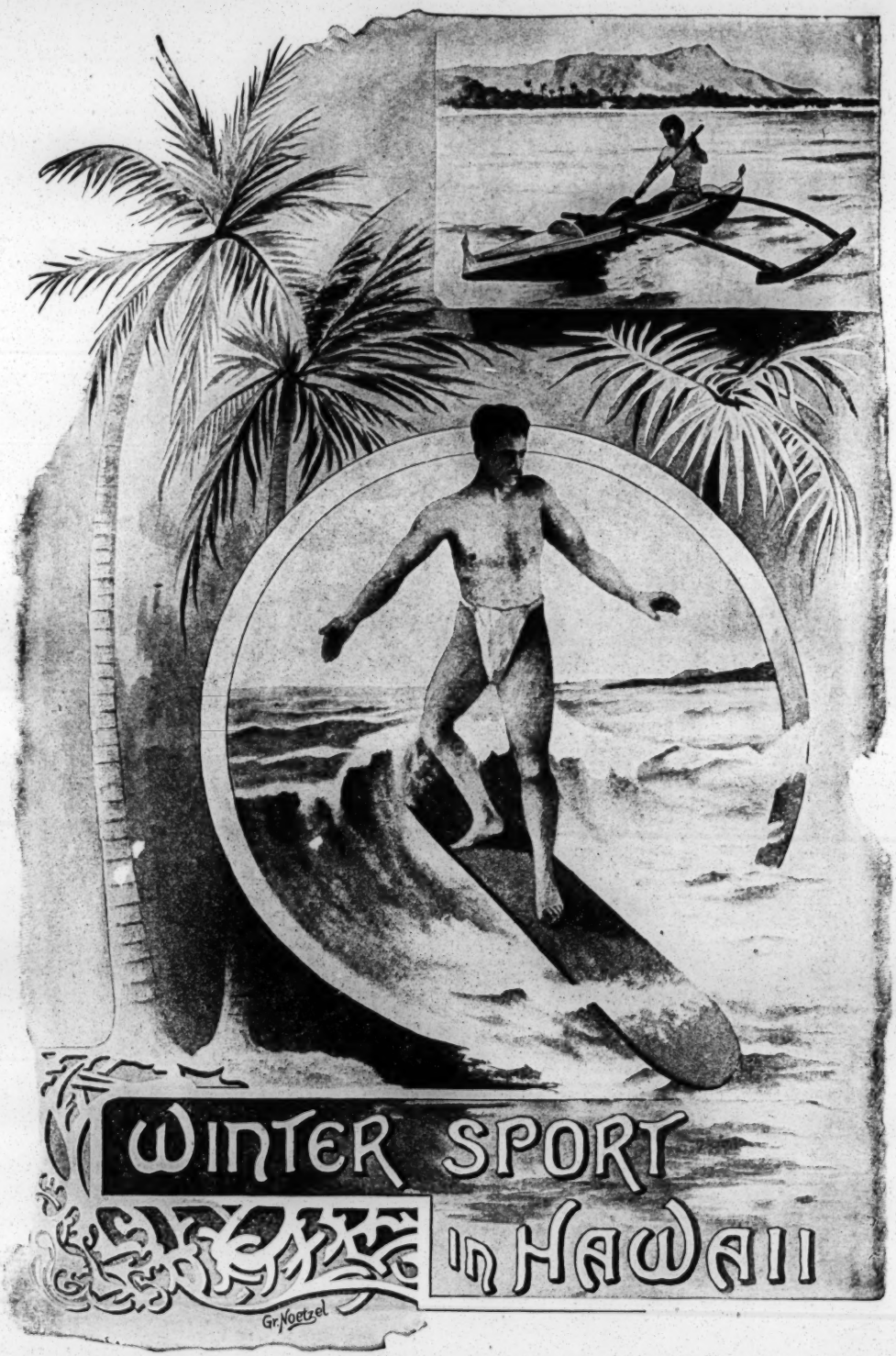
Friday, March 6—"The Missions of California," by Hon. Joseph R. Knowland, M. C. from California. Illustrated.

Friday, March 13—"Our Immigrants," by United States Senator Dillingham, of Vermont. Illustrated.

Friday, March 20—"Reclaiming the West," by Mr C. J. Blanchard, U. S. Reclamation Service. Mr Blanchard will describe the opening to settlement of the lands irrigated by the great government works. Illustrated.

Friday, March 27—"The Physical Geography of the Sea," by Rear Admiral Colby M. Chester, U. S. Navy. Illustrated with moving pictures and lantern slides.

Friday, April 3—"Cathedrals, Mosques, and Temples of the World," by Hon. O. P. Austin, Chief U. S. Bureau of Statistics. Illustrated with moving pictures and lantern slides. (Last lecture of the season.)



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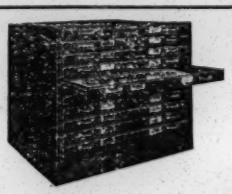

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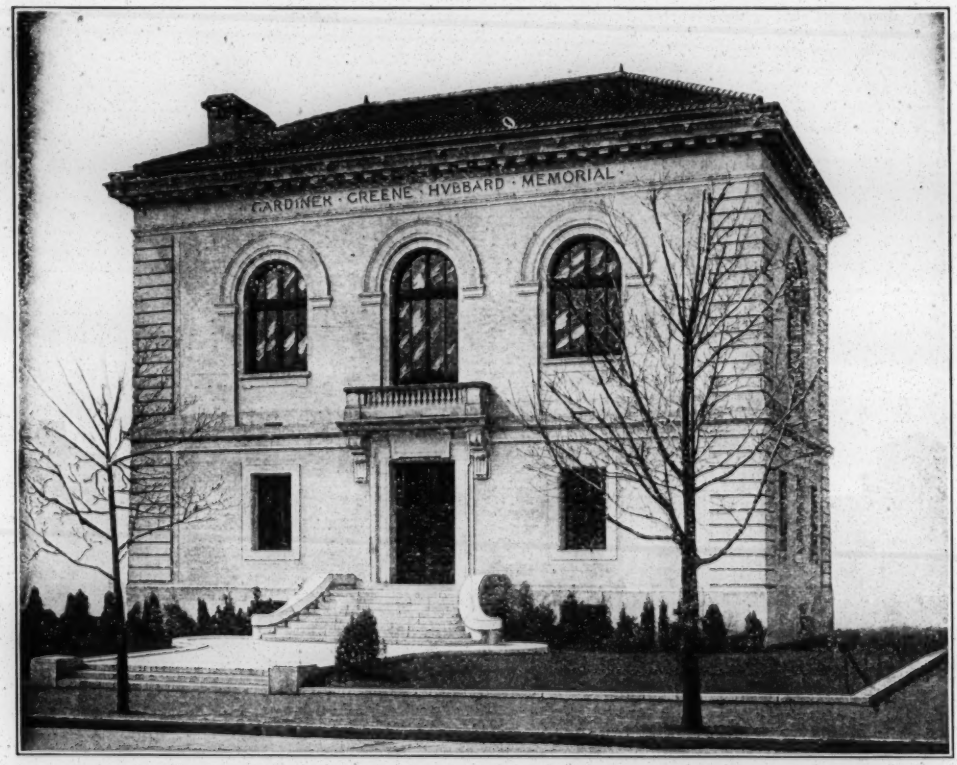

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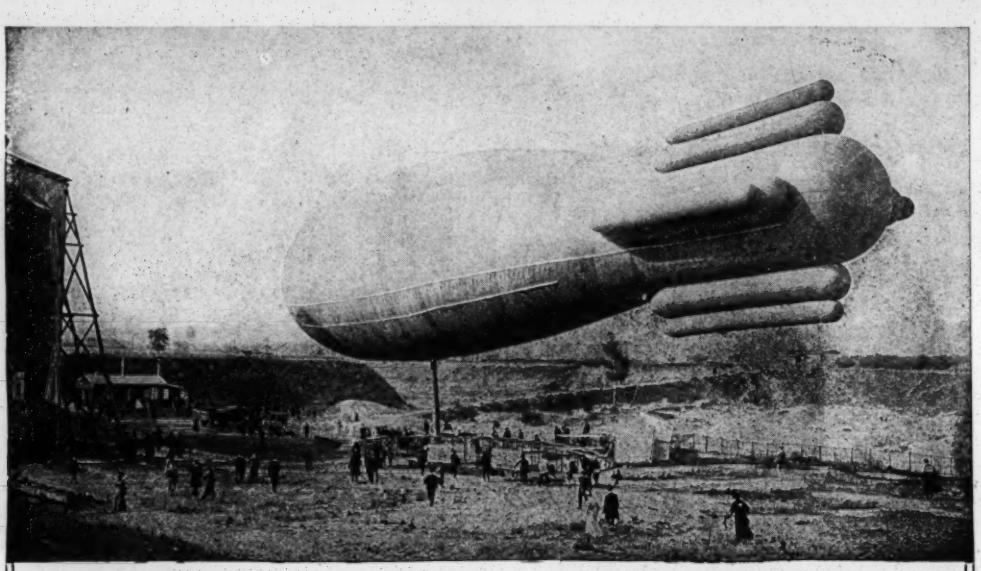

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